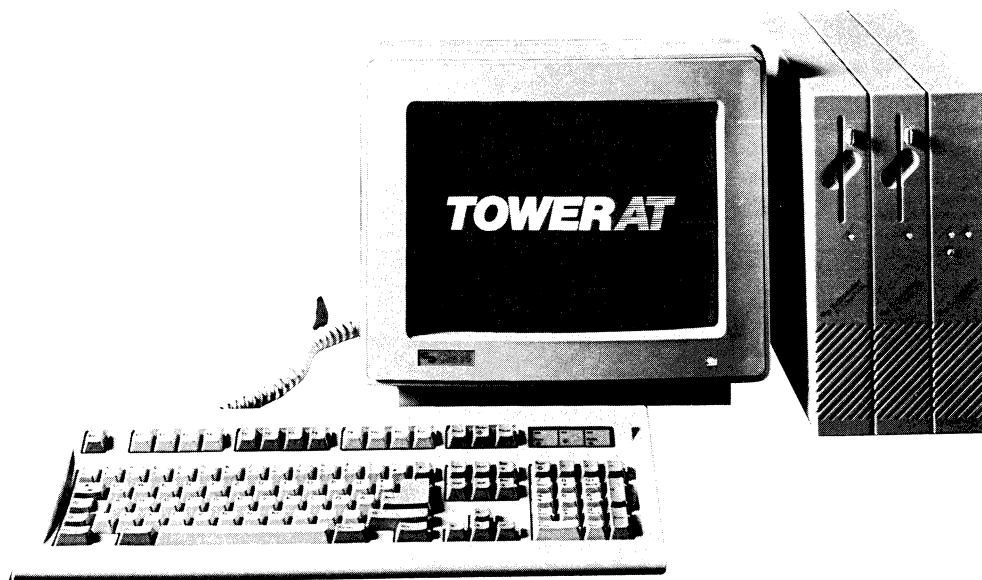


Kundendienst-Handbuch Service Manual

PERSONAL COMPUTER Tower AT 201/202/220

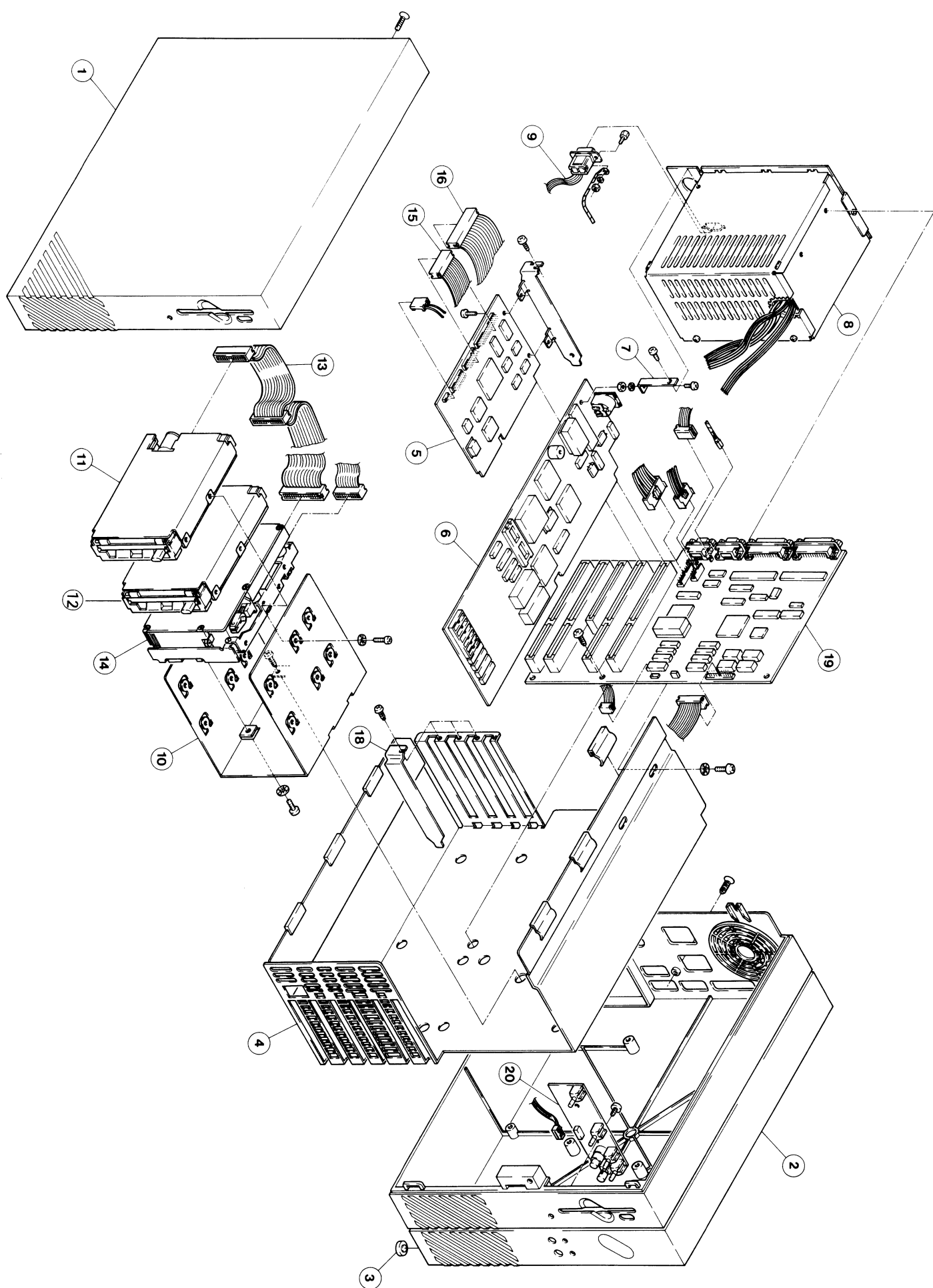


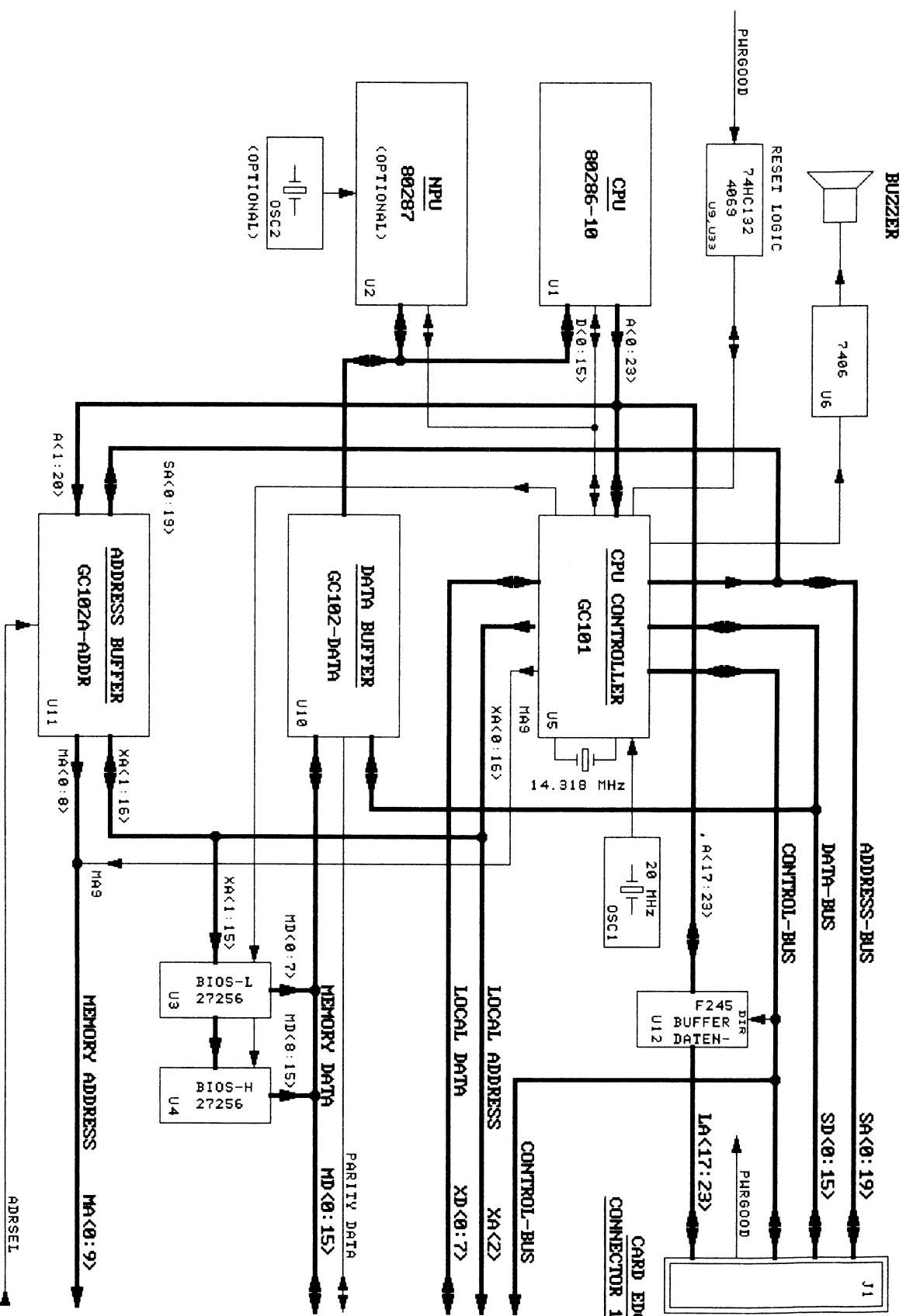
Ersatzteilliste für Tower AT 201/202/220
Parts List for Tower AT 201/202/220

Bestell-Nr. Part.-No.	Bezeichnung	Description	Zeich.-Pos. Ref.-No.	Preisgruppe
50 467 00	FK System Tower	Box system tower		C 3
50 466 00	Sty-Verp. System Tower	Polyfoam system tower		C 3
50 495 00	FK Tastatur Tower	Box keyboard tower		C 2
50 496 00	Sty-Verp. Tastatur Tower	Polyfoam keyboard tower		C 2
50 481 00	Tastatur (D)	Keyboard (D)		F 6
50 482 00	Tastatur (F)	Keyboard (F)		F 6
50 202 00	Tastatur (DK)	Keyboard (DK)		F 6
50 203 00	Tastatur (I)	Keyboard (I)		F 6
50 204 00	Tastatur (N)	Keyboard (N)		F 6
50 485 00	Tastatur (S/SF)	Keyboard (S/SF)		F 6
50 206 00	Tastatur (P)	Keyboard (P)		F 6
50 214 00	Tastatur (GR)	Keyboard (GR)		F 6
50 484 00	Tastatur (GB)	Keyboard (GB)		F 6
50 483 00	Tastatur (E)	Keyboard (E)		F 6
50 486 00	Tastatur (CH)	Keyboard (CH)		F 6
50 097 00	Netzkabel (D)	Cord AC (D)		C 0
50 562 00	Netzkabel (GB)	Cord AC (GB)		C 0
50 617 00	Netzkabel (CH)	Cord AC (CH)		C 0
50 225 00	Gehäuse Oberteil Tower	Cabinet top	1	C 3
50 226 00	Gehäuse Unterteil Tower	Cabinet bottom	2	C 9
50 493 00	Gehäusefuß	Leg	3	A 5
50 172 00	Blechchassis Tower	Chassis metal	4	D 4
50 450 00	HD Controller 220 MFM	HD Controller 220 MFM	5	G 1
50 229 00	Platine Best. (D) Tower AT CPU	PCB (D) tower AT CPU	6	*
50 293 00	Halte winkel CPU Leiterplatte	Angle CPU	7	A 9
50 215 00	Netzteil Tower 90 W	Power supply tower 90 W	8	G 8
50 448 00	Kabelbaum 9pol.	Cable 9-pol.	9	B 8
50 171 00	Floppyhalter	Bracket floppy	10	B 8
50 472 00	Floppy Laufwerk	Floppy disk drive	11, 12	G 7
50 221 00	Kabelbaum Floppy 26pol.	Cable floppy 26-pol.	13	B 7
50 473 00	Hard Disk Laufwerk	Hard disc drive	14	J 9
50 220 00	Kabelbaum 20pol.	Cable 20-pol.	15	B 9
50 223 00	Kabelbaum 34pol.	Cable 34-pol.	16	C 5
50 224 00	Blindblende	Plate blind	17	A 9
50 020 00	Blindblech	Plate blind	18	B 9
50 228 00	Platine Best. (D) Tower EGA I/O	PCB (D) tower EGA I/O	19	J 1

*Preis auf Anfrage

Exploded view



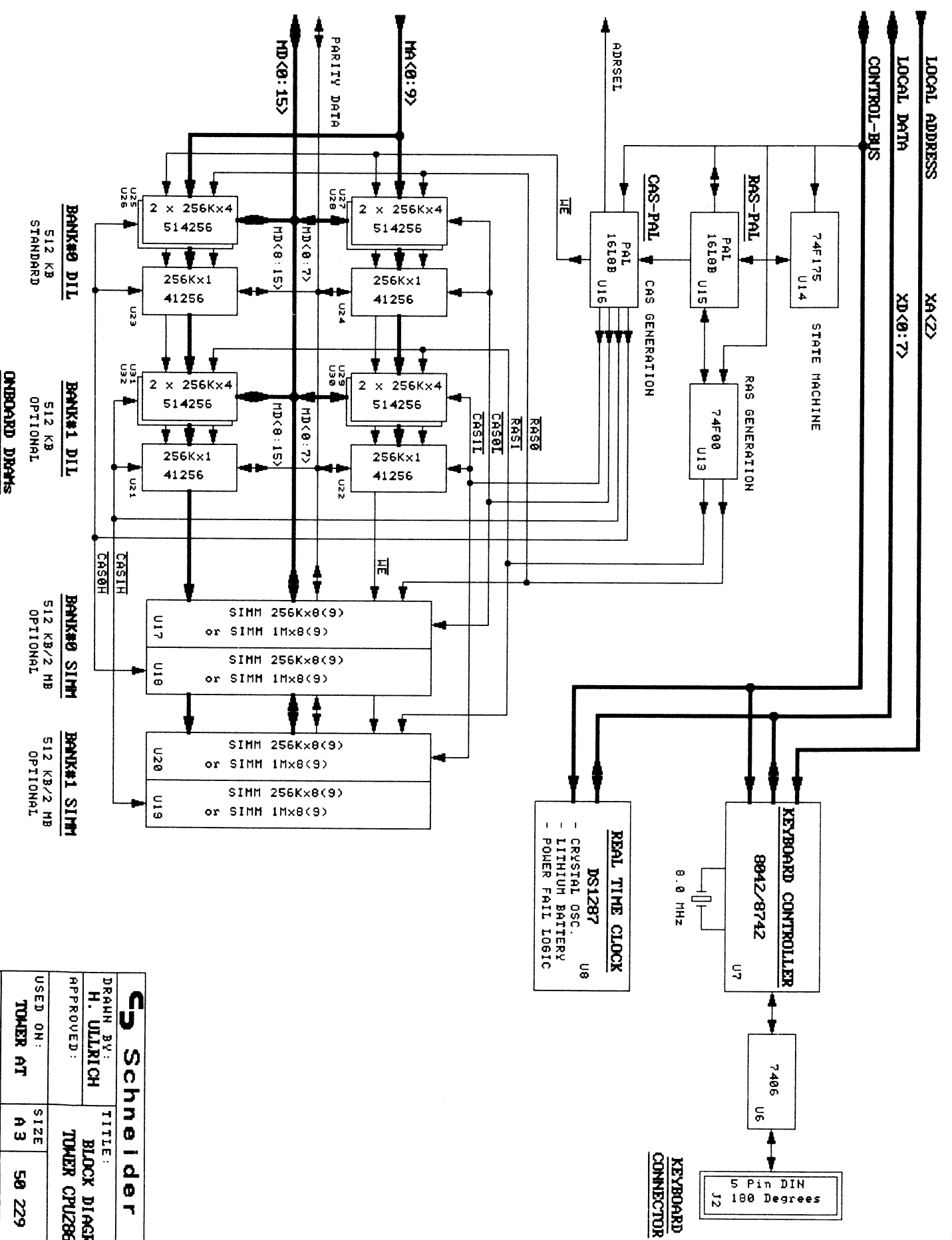


Schneider

DRAWN BY: H. ULLRICH
 APPROVED: TOWER CPU286 PCB

USED ON: TOWER AT
 SIZE: A3
 REV: 1

DATE: 10-05-88
 SHEET: 1 of 2



Schneider

DRAWN BY: H. ULLRICH
APPROVED: TUMER AT

TITLE: BLOCK DIAGRAM
TUMER CPU286 PCB

USED ON: TUMER AT
SIZE: A3
REV: 1

DATE: 10-05-88
SHEET: 2 of 2

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
1	ADVANCED ENGINEERING RELEASE	05-13-88	SCHLAGE
2		05-18-88	ASSMANN
3		06-01-88	SCHLAGE
4	First Layout	06-22-88	SCHLAGE
5	Layout REV 2	08-06-88	ASSMANN
6	Layout REV 2 CORRECTIONS	08-22-88	ASSMANN
7	PCB REV 2A FIX OF BUS 'MASTER'	08-31-88	ASSMANN
8	PCB REV 4. LAYOUT: ADDITIONAL RESET LOGIC ELIMINATED	10-27-88	ULLRICH

DRAWING FILES:	CONTENTS:
TDM_81.DWG	THIS SHEET
TDM_82.DWG	CPU SECTION
TDM_83.DWG	BIOS EPROMS
TDM_84.DWG	GC101
TDM_85.DWG	KEYBOARD / CLOCKS
TDM_86.DWG	REAL TIME CLOCK
TDM_87.DWG	ADDRESS / DATA BUFFERS
TDM_88.DWG	TIMING FOR MEMORY
TDM_89.DWG	MEMORY ON SIL- MODULE
TDM_810.DWG	MEMORY ON BOARD
TDM_811.DWG	CONNECTORS
TDM_812.DWG	BLOCK CAPS

Schneider

DRAWN BY:
H. ULLRICH

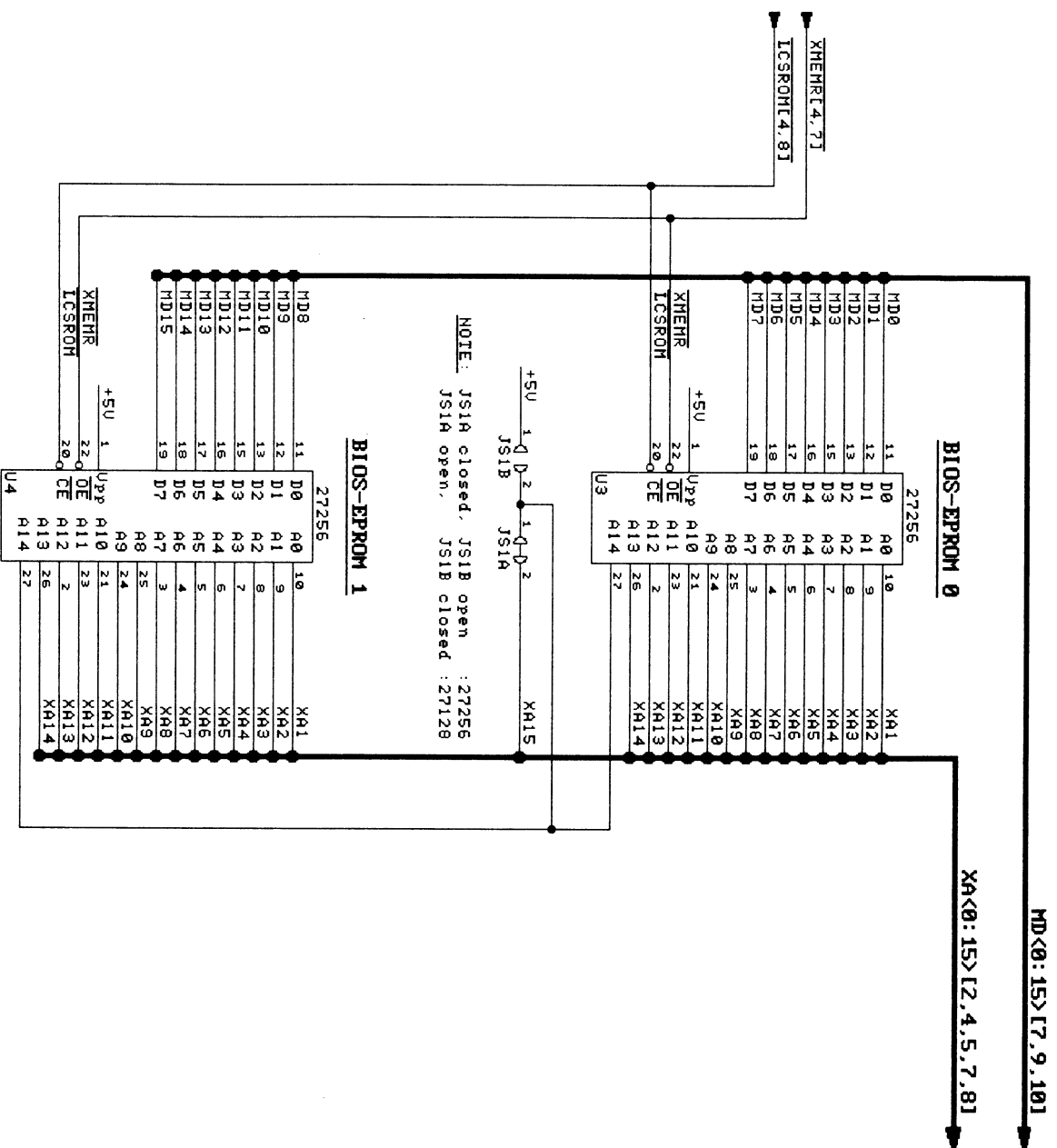
APPROVED:

TITLE:
SCHEMATICS
Tower-- CPU286

USED ON:	SIZE	REV
Tower--AT	A3	8

DATE: 11-02-88 SHEET: 1 of 12

TDM_81



Schneider

DRAWN BY:
B. ASSMANN

APPROVED:

TITLE:
**SCHEMATIC
Tower--CPU286**

USED ON:

Tower--AT

SIZE
A3

50 229

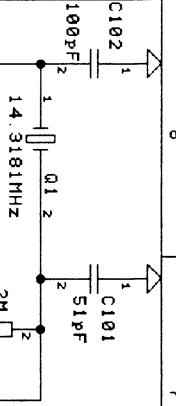
REV
8

DATE: 11-02-88

SHEET: 3 of 12

TOM-83

XA<0:16>[2,3,5,7,8]
CPU-ADDR<0:23>[2,7]



55	XA0	78	A0	104	A17
56	XA1	79	A1	105	A18
57	XA2	104	A17	106	A19
58	XA3	105	A18	107	A20
59	XA4	106	A19	108	A21
60	XA5	107	A20	109	A22
61	XA6	108	A21	110	A23
62	XA7	109	A22		
63	XA8	110	A23		
64	XA9				
65	XA10				
66	XA11				
67	XA12				
68	XA13				
69	XA14				
70	XA15				
71	XA16				
72	XA17				
73	XA18				
74	XA19				
75	XA20				
76	XA21				
77	XA22				
78	XA23				

138	CS042[5]	137	DMACEN[7]
139	RC[5]	138	CPUHLDA[2,7,8]
140	OBFULL[5]	139	S0[2,8]
141	HISPEED[5]	140	S1[2,8]
142		141	M-10[2]
143		142	
144		143	
145		144	
146		145	
147		146	
148		147	
149		148	

GC101-160 P-FP

U5

VSS = 19, 20, 42, 59, 60
100, 101, 140, 141
VDD = 40, 80, 120, 160

99	XMEMR[3,7,8]	142	T/C
100	XMEMR[2,5]	143	TOCHCK
101	XMEMR[1,6]	144	TOCHRDY
102	XMEMR[0]	145	BALE
103	XMEMR[7]	146	ZEROM[8,11]
104	XMEMR[6]	147	MEMS1[6,11]
105	XMEMR[5]	148	IOCS1[6,11]
106	XMEMR[4]	149	
107	XMEMR[3]	150	
108	XMEMR[2]	151	
109	XMEMR[1]	152	
110	XMEMR[0]	153	
111		154	
112		155	
113		156	
114		157	
115		158	
116		159	
117		160	
118		161	
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155		198	
156		199	
157		200	
158		201	
159		202	
160		203	

138	CS042[5]	137	DMACEN[7]
139	RC[5]	138	CPUHLDA[2,7,8]
140	OBFULL[5]	139	S0[2,8]
141	HISPEED[5]	140	S1[2,8]
142		141	M-10[2]
143		142	
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201		200	
202		201	
203		202	

Cy Schneider

DRAWN BY: H. ULRICH
APPROVED: Tower-AT

TITLE: SCHEMATIC
Tower-CPU286

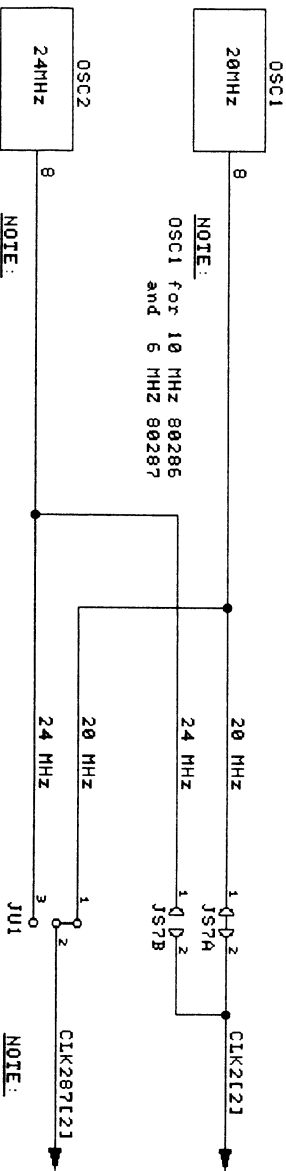
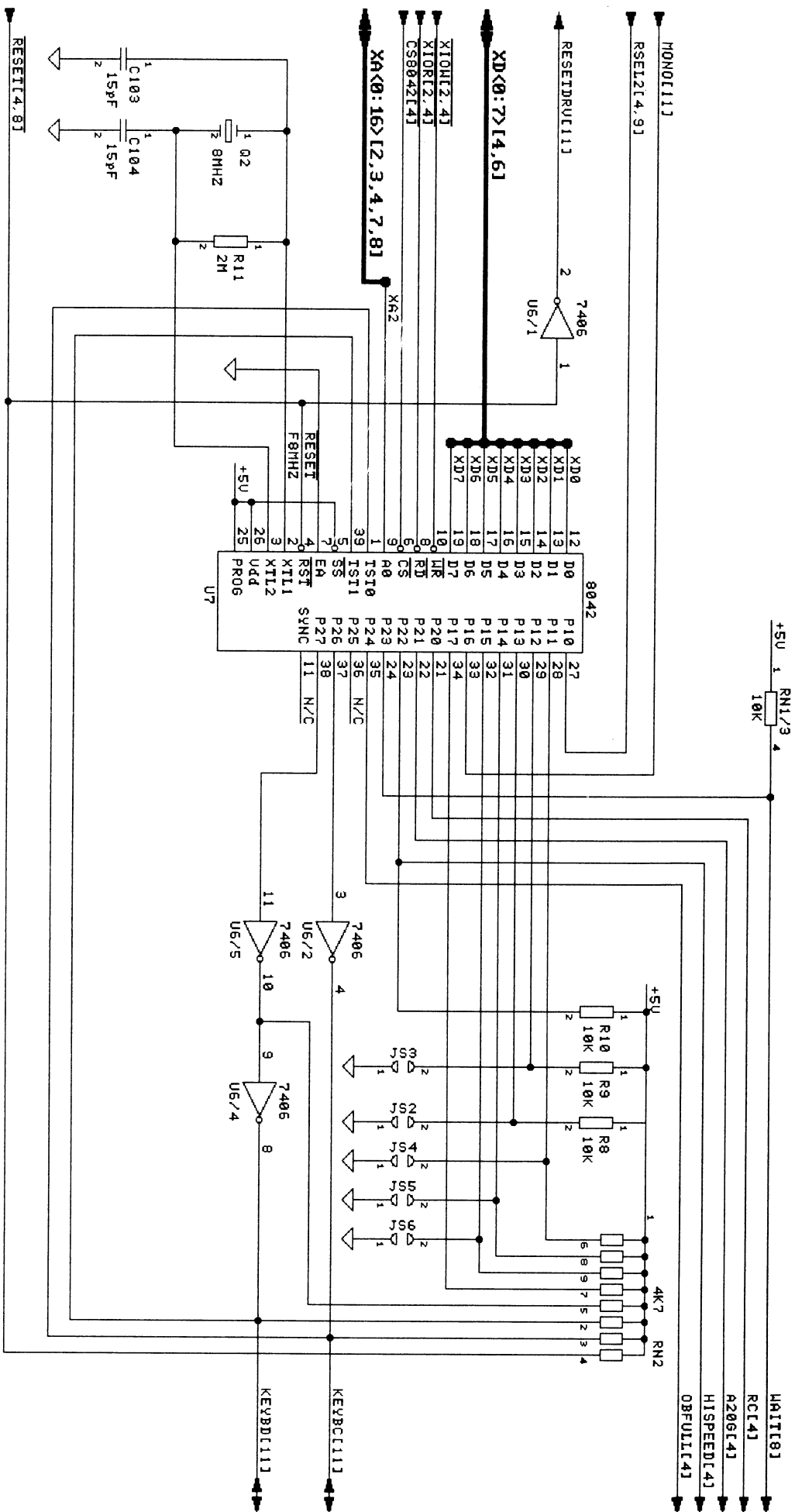
USED ON: Tower-AT
DATE: 11-02-88

SIZE: A3
SHEET: 4 of 12

REV: 8

SD<0:15>[7,11]

XD<0:7>[5,6]



NOTE:
OSC1 for 10 MHz 80286
and 6 MHz 80287

NOTE:
OSC2 optionally for 8 MHz 80287

NOTE:
JS7A closed, JS7B open : 10 MHz 80286
JS7A open, JS7B closed: 12 MHz 80286

Schneider

DRAWN BY: H. ULLRICH

APPROVED: Tower-AT

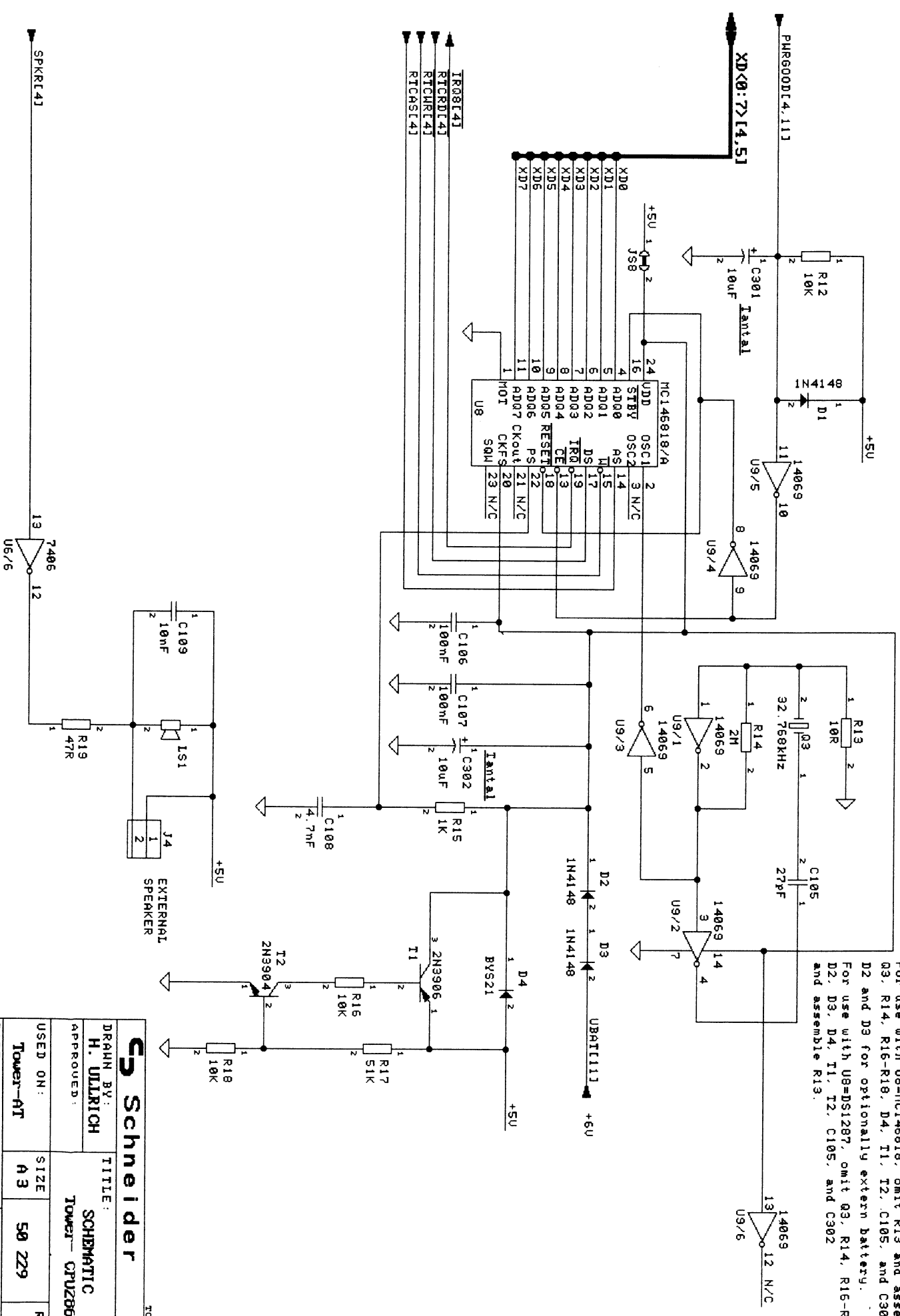
USED ON: Tower-AT

DATE: 11-02-88

SHEET: 5 of 12

TOM-85

NOTE:
 For use with U8=MC146818, omit R13 and assemble Q3, R14, R16-R18, D4, T1, T2, C105, and C302.
 D2 and D3 for optionally external battery.
 For use with U8=DS1287, omit Q3, R14, R16-R18, D2, D3, D4, T1, T2, C105, and C302 and assemble R13.

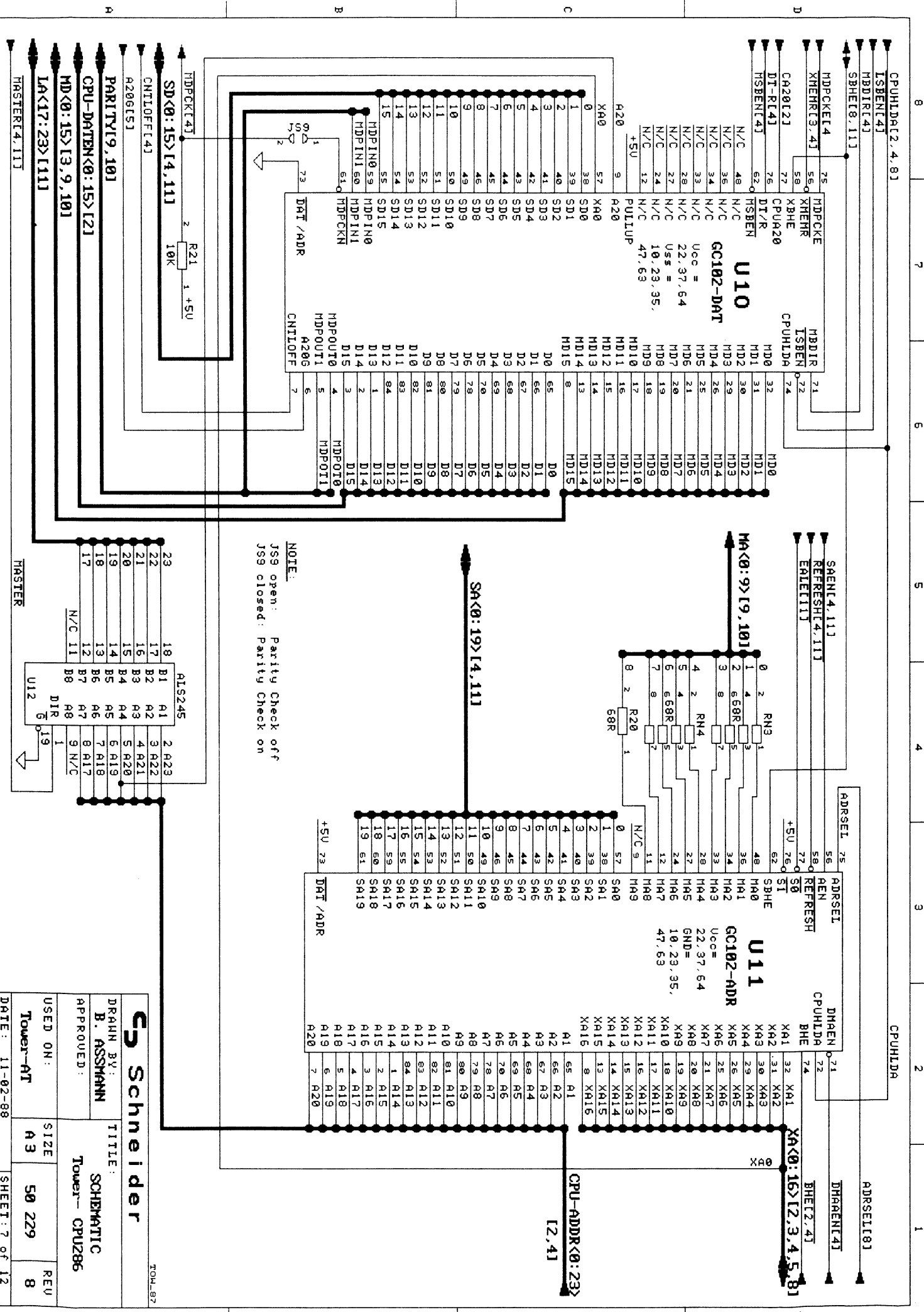


Schneider
 TITLE: SCHEMATIC
 Tower-CPU286

DRAWN BY: H. ULLRICH
 APPROVED: [Signature]

USED ON: Tower-AT
 SIZE: A3
 SHEET: 50 Z29
 REV: 8

DATE: 11-02-88
 SHEET: 6 OF 12



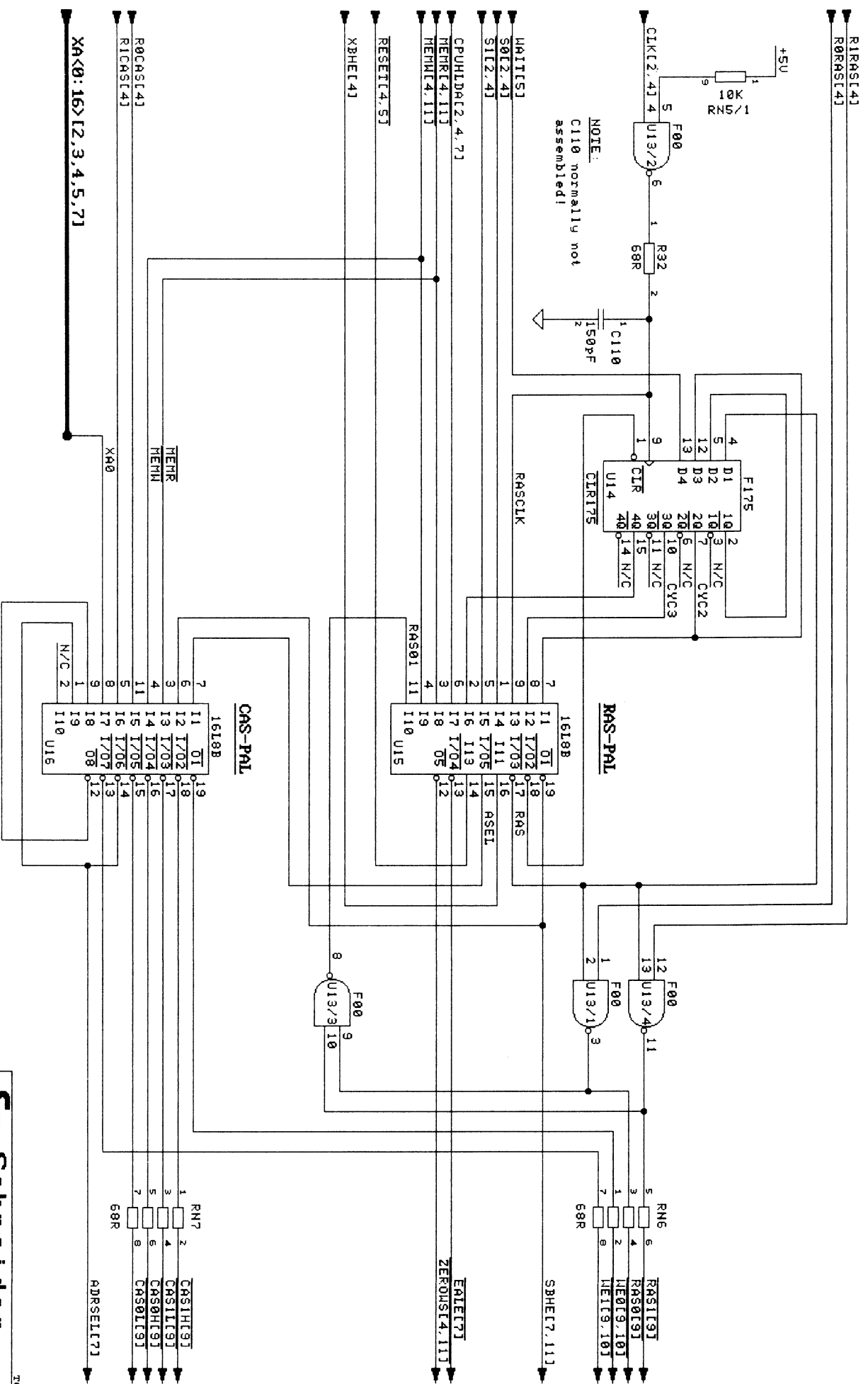
NOTE:
JS9 open: Parity Check off
JS9 closed: Parity Check on

Schneider

DRAWN BY: B. ASSMANN
TITLE: SCHEMATIC
APPROVED: Tower-CPU286

USED ON: Tower-AT
SIZE: A3
REVISION: 50 229 8

DATE: 11-02-88
SHEET: 7 of 12

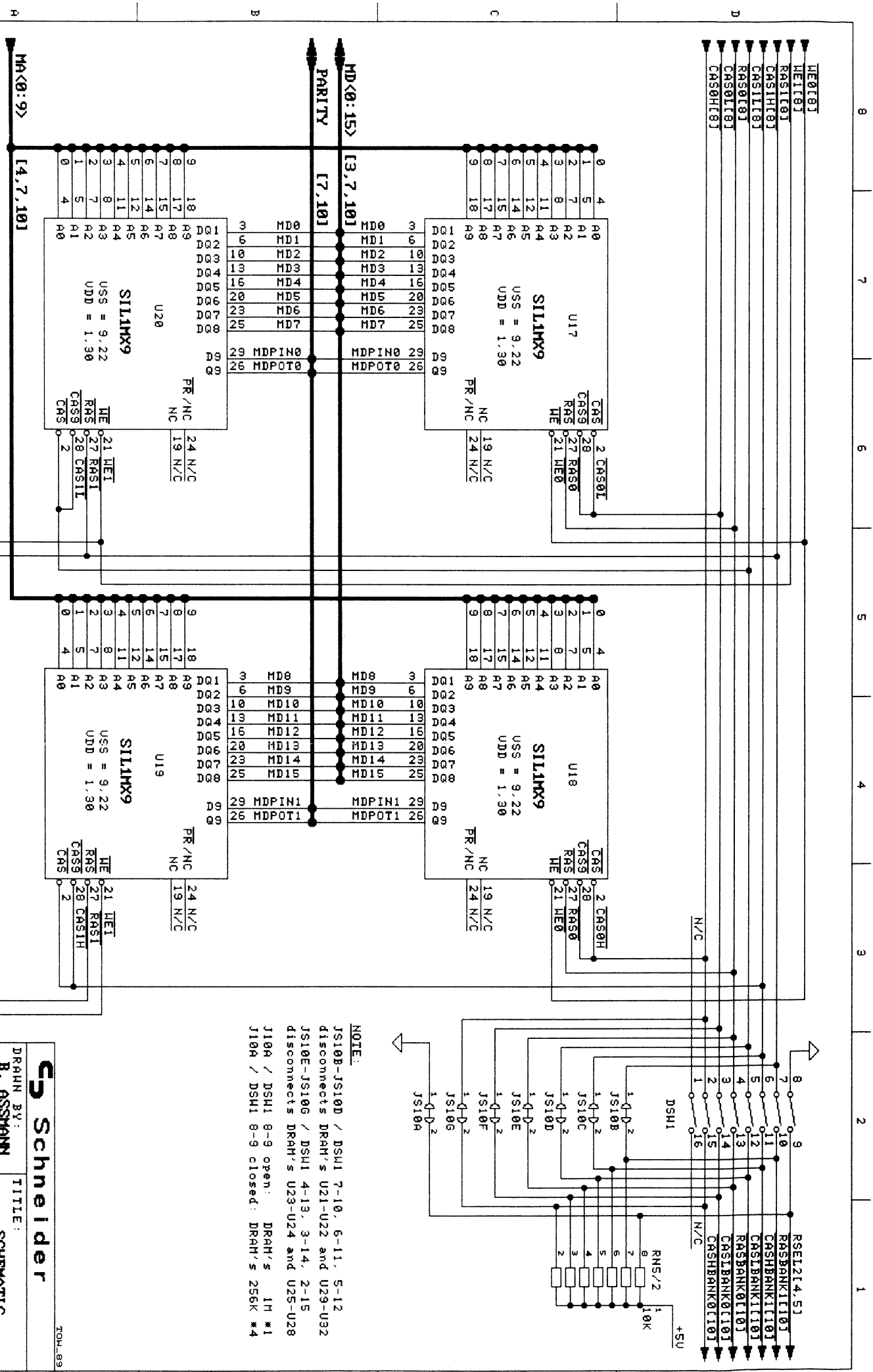


Schneider

DRAWN BY: B. ASSMANN
APPROVED: TOWER CPU 80286

USED ON: TOWER-AT
SIZE: A3
REV: 8

DATE: 11-02-88
SHEET: 8 of 12



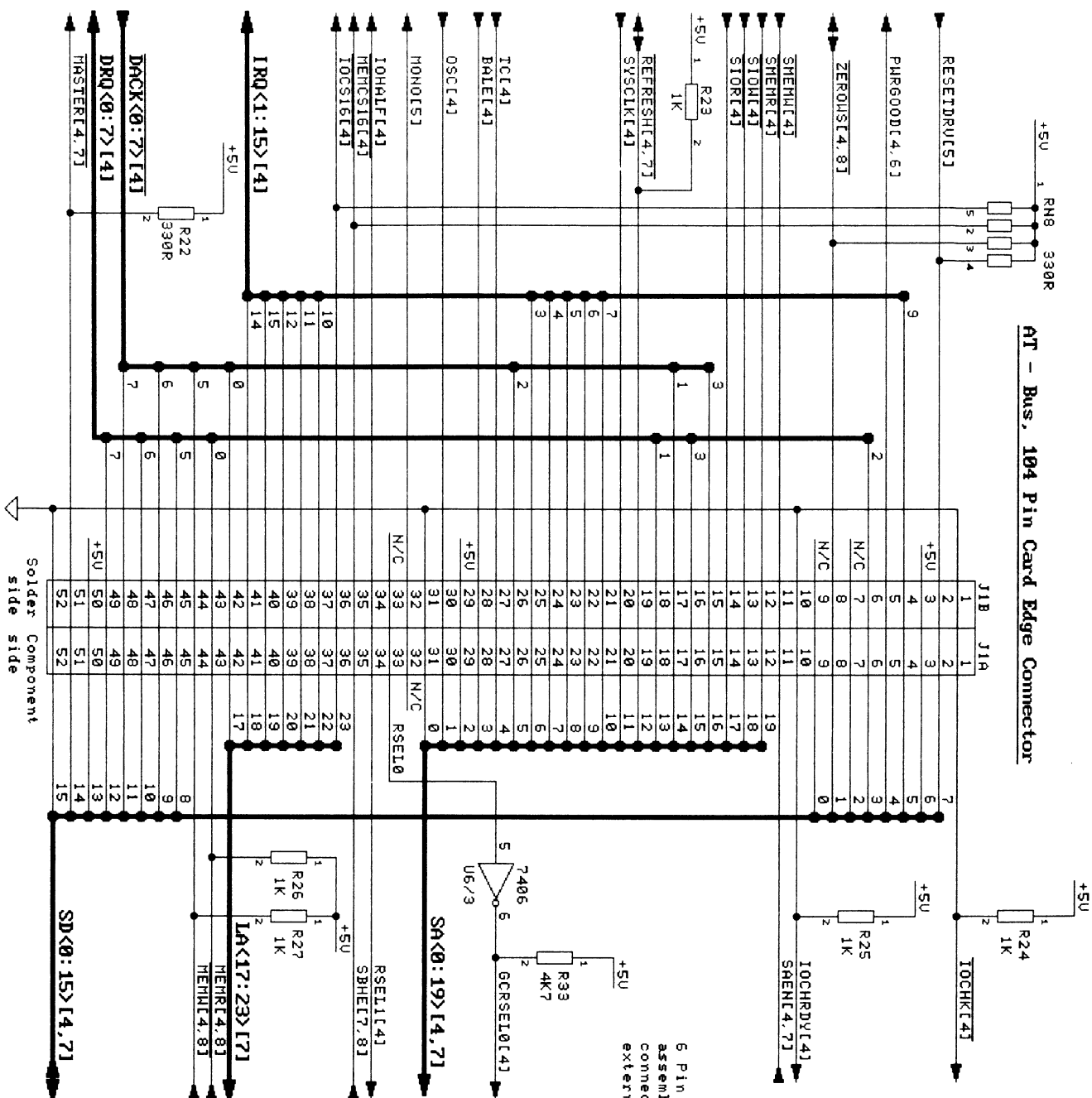
NOTE:
 JS10B-JS10D / DSN1 7-10, 6-11, 5-12
 disconnects DRAM's U21-U22 and U23-U32
 JS10E-JS10G / DSN1 4-13, 3-14, 2-15
 disconnects DRAM's U23-U24 and U25-U28
 J10A / DSN1 8-9 open: DRAM's 1M *1
 J10A / DSN1 8-9 closed: DRAM's 256K *4

Schneider

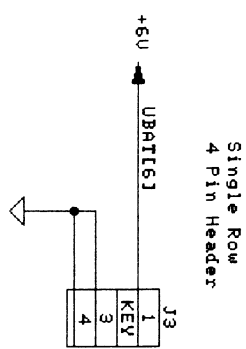
DRAMA BY: **B. ASSMANN**
 TITLE: **SCHEMATIC**
 APPROVED: **Tower- CPU286**

USED ON: **SIZE** **REV**
Tower-AT **A3** **50 229** **8**
 DATE: 11-02-88 SHEET: 9 of 12

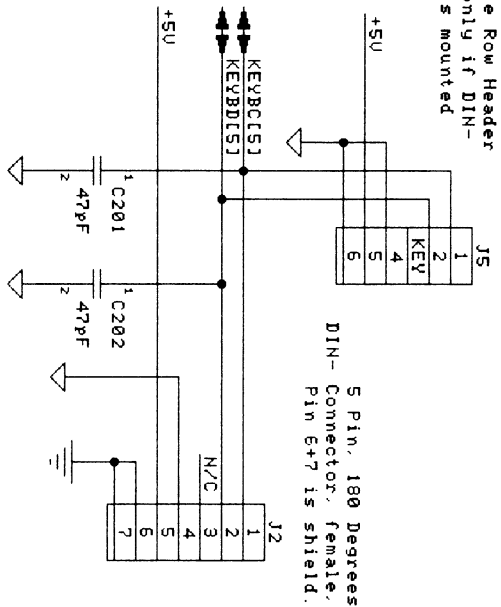
AT - Bus, 104 Pin Card Edge Connector



Battery- Connector +6V



Keyboard- Connector



Schneider

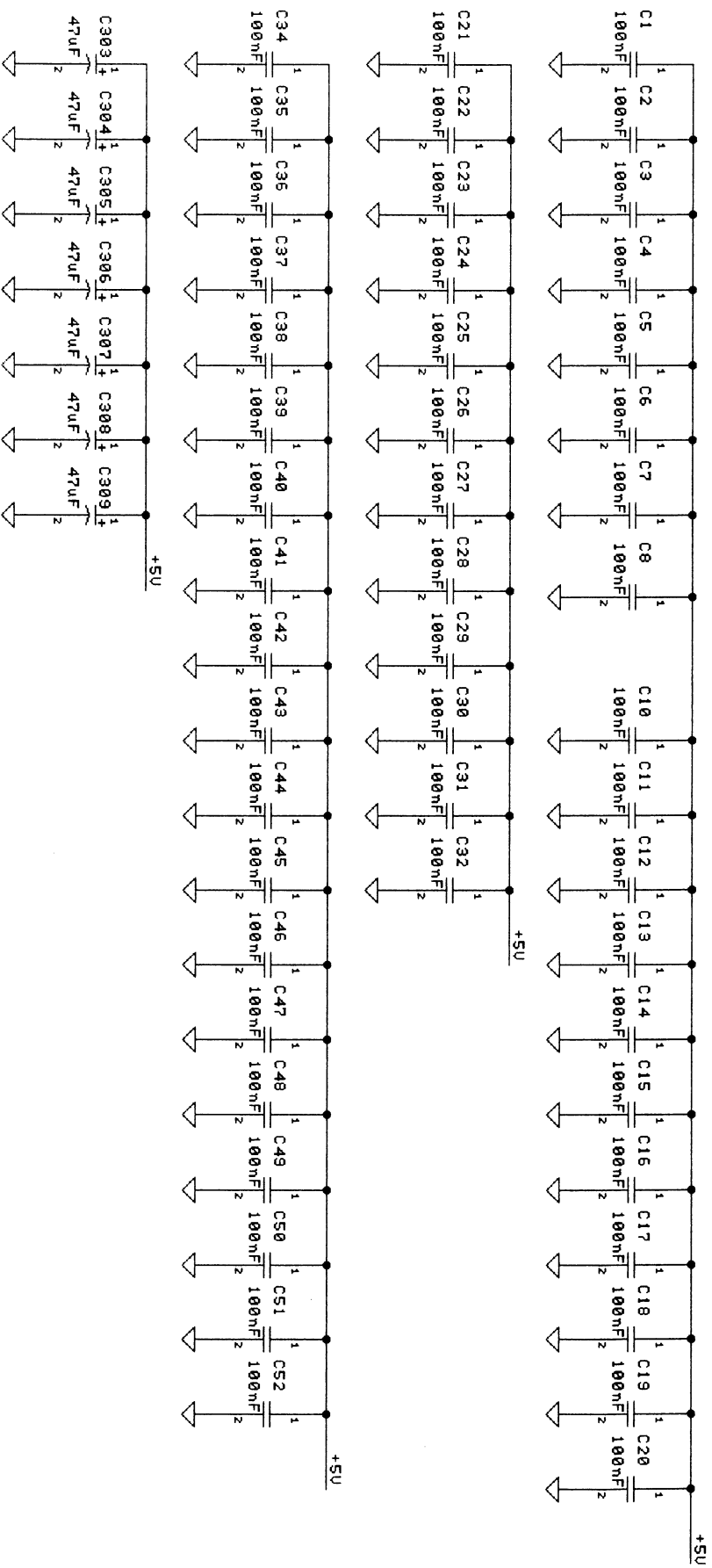
DRAWN BY:	H. ULRICH	TITLE:	SCHNEIDER
APPROVED:			Tower- CPU286
USED ON:	Tower-AT	SIZE:	A3
DATE:	11-02-88		50 229
			8
			REV

Solder Component side

6 Pin Single Row Header assembled only if DIN-connector is mounted externally

5 Pin, 180 Degrees DIN- Connector, female, Pin 6+7 is shield.

TOL-811



Schneider

DRAWN BY:
B. ASSMANN

APPROVED:

TITLE:
**SCHEMATIC
Tower- CPU286**

USED ON:

Tower-AT

SIZE

A3

REV

8

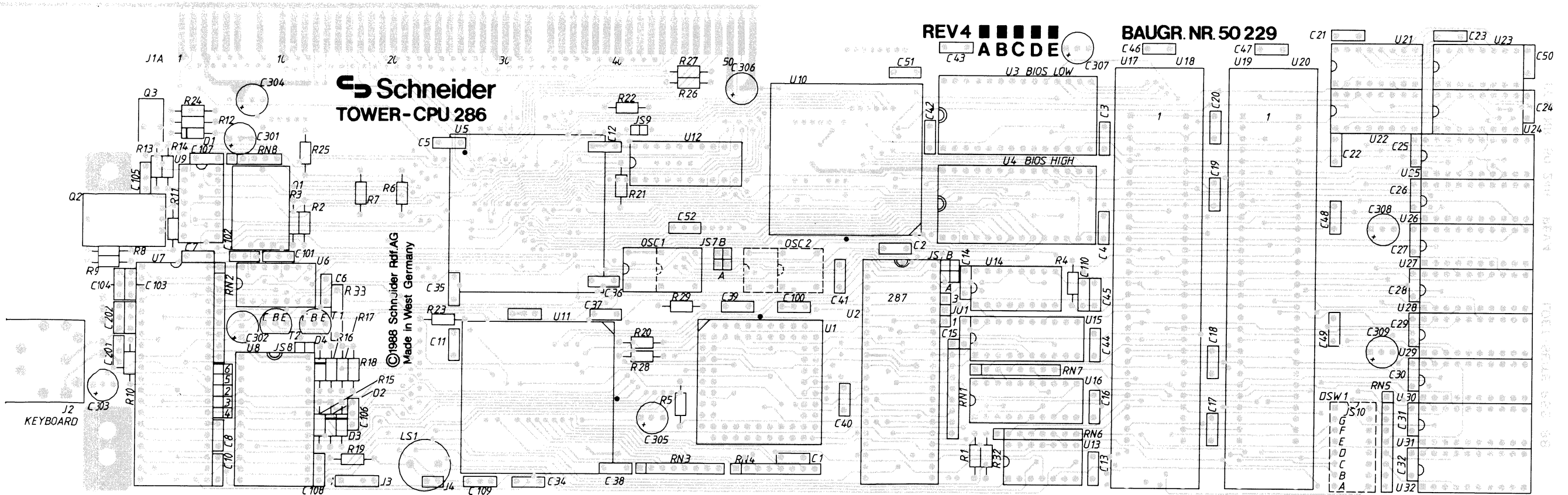
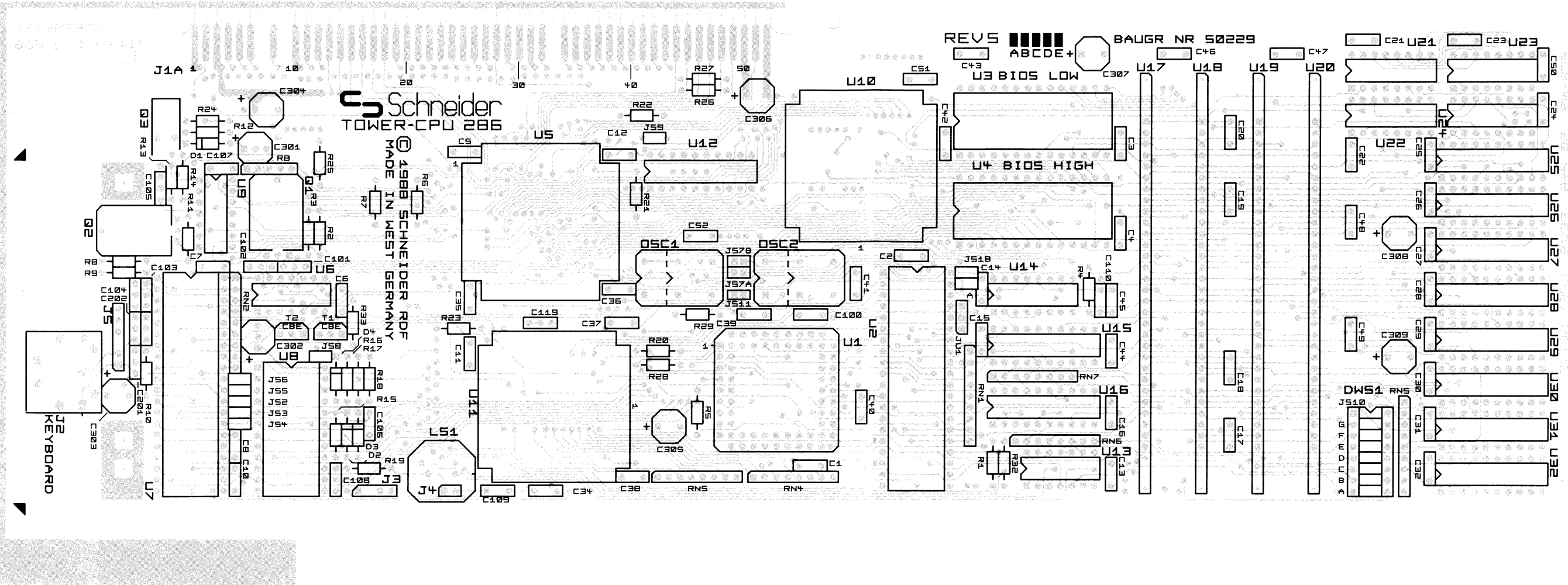
DATE: 11-02-88

SHEET: 12 of 12

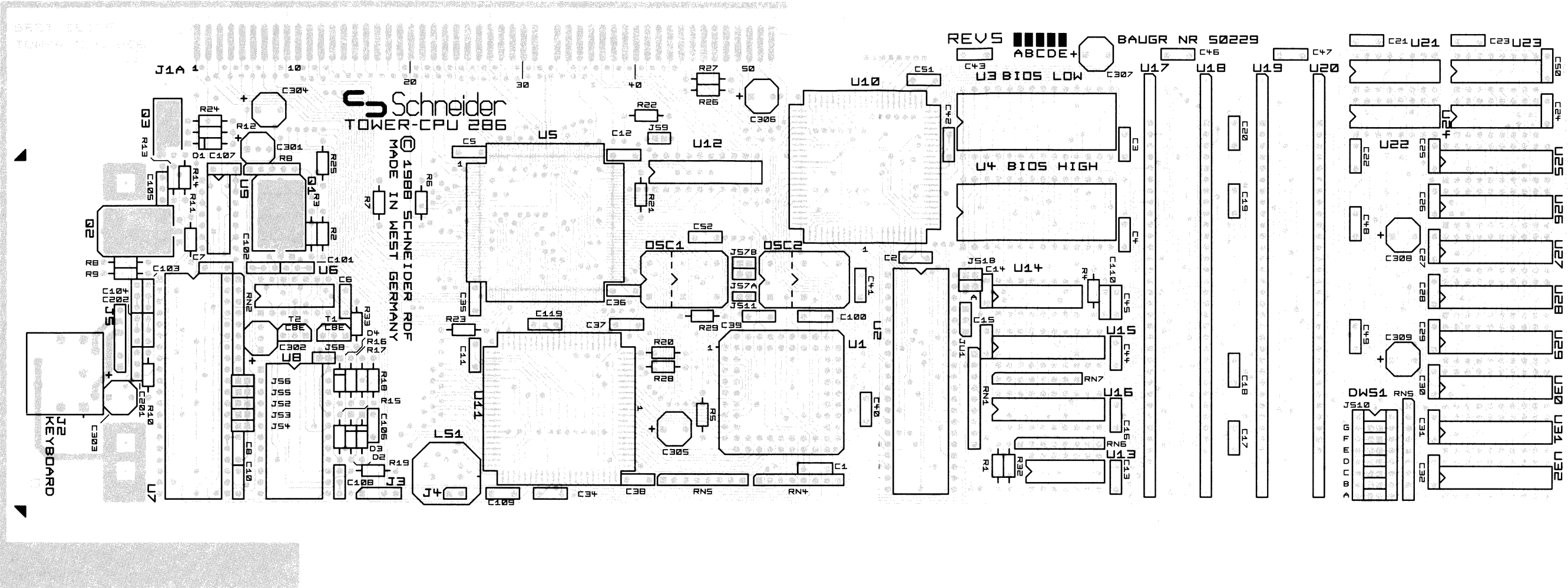
Ersatzteilliste für Platine Best. (D) Tower AT CPU
Parts List PCB (D) Tower AT CPU

Bestell-Nr. Part.-No.	Bezeichnung	Description	Zeich.-Pos. Ref.-No.	Preisgruppe
50 115 00	IC 80286	IC 80286	U 1	F 4
50 444 00	IC EPROM 256K prog.	IC EPROM 256K prog.	U 3	C 9
50 445 00	IC EPROM 256K prog.	IC EPROM 256K prog.	U 4	C 9
50 047 00	IC GC 101C CPU Contr. (Rev. 4)	IC GC 101C CPU Contr. (Rev. 4)	U 5	F 5
50 776 00	IC GC 101D CPU Contr. (Rev. 5)	IC GC 101D CPU Contr. (Rev. 5)	U 5	F 5
50 122 00	IC 7406	IC 7406	U 6	A 7
50 243 00	IC 8042 prog.	IC 8042 prog.	U 7	C 3
50 177 00	IC DS 1287	IC DS 1287	U 8	D 4
50 323 00	IC MC 14069	IC MC 14069	U 9	A 3
50 045 00	IC GC 102 Data	IC GC 102 Data	U 10	D 7
50 046 00	IC GC 102A Address	IC GC 102A Address	U 11	D 7
50 249 00	IC 74 ALS 245	IC 74 ALS 245	U 12	B 1
50 123 00	IC 74 F 00	IC 74 F 00	U 13	A 3
50 242 00	IC 74 F 175	IC 74 F 175	U 14	A 8
50 334 00	IC PAL 16L8BCN RAS-PAL	IC PAL 16L8BCN RAS-PAL	U 15	B 8
50 333 00	IC PAL 16L8BCN CAS-PAL	IC PAL 16L8BCN CAS-PAL	U 16	B 8
50 160 00	IC DRAM 256x4	IC DRAM 256x4	U 25-28	F 4
50 379 00	IC 74 HC 132	IC 74 HC 132	U 33	A 5
50 338 00	Diode 1 N 4148	Diode 1 N 4148	D 1,5	A 0
50 325 00	Quarz 14,31818 MHz	Quarz 14.31818 MHz	Q 1	B 3
50 326 00	Quarz 8,0 MHz	Quarz 8.0 MHz	Q 2	B 0
50 327 00	Osz. 20,0 MHz	Osc. 20.0 MHz	OSC 1	C 0
50 345 00	Elko rad. 47µF/16V	CE 47µF/16V	C 303-309	A 2
50 344 00	Tantal 10µF/16V	CE 10µF/16V	C 301	A 4
50 381 00	Tantal 1µF/16V	CE 1µF/16V	C 310	A 3
50 316 00	R-Netzwerk 8x10K	Network 8x10K	RN 1,5	A 3
50 319 00	R-Netzwerk 8x4K7	Network 8x4K7	RN 2	A 3
50 382 00	R-Netzwerk 4x68R	Network 4x68R	RN 3, 4, 6, 7	A 2
50 331 00	R-Netzwerk 4x330R	Network 4x330R	RN 8	A 2
50 332 00	Summer	Buzzer	LS 1	A 8
50 181 00	Buchse Dioden 5 Pin	Socket Diode 5 Pin	J 2	A 5

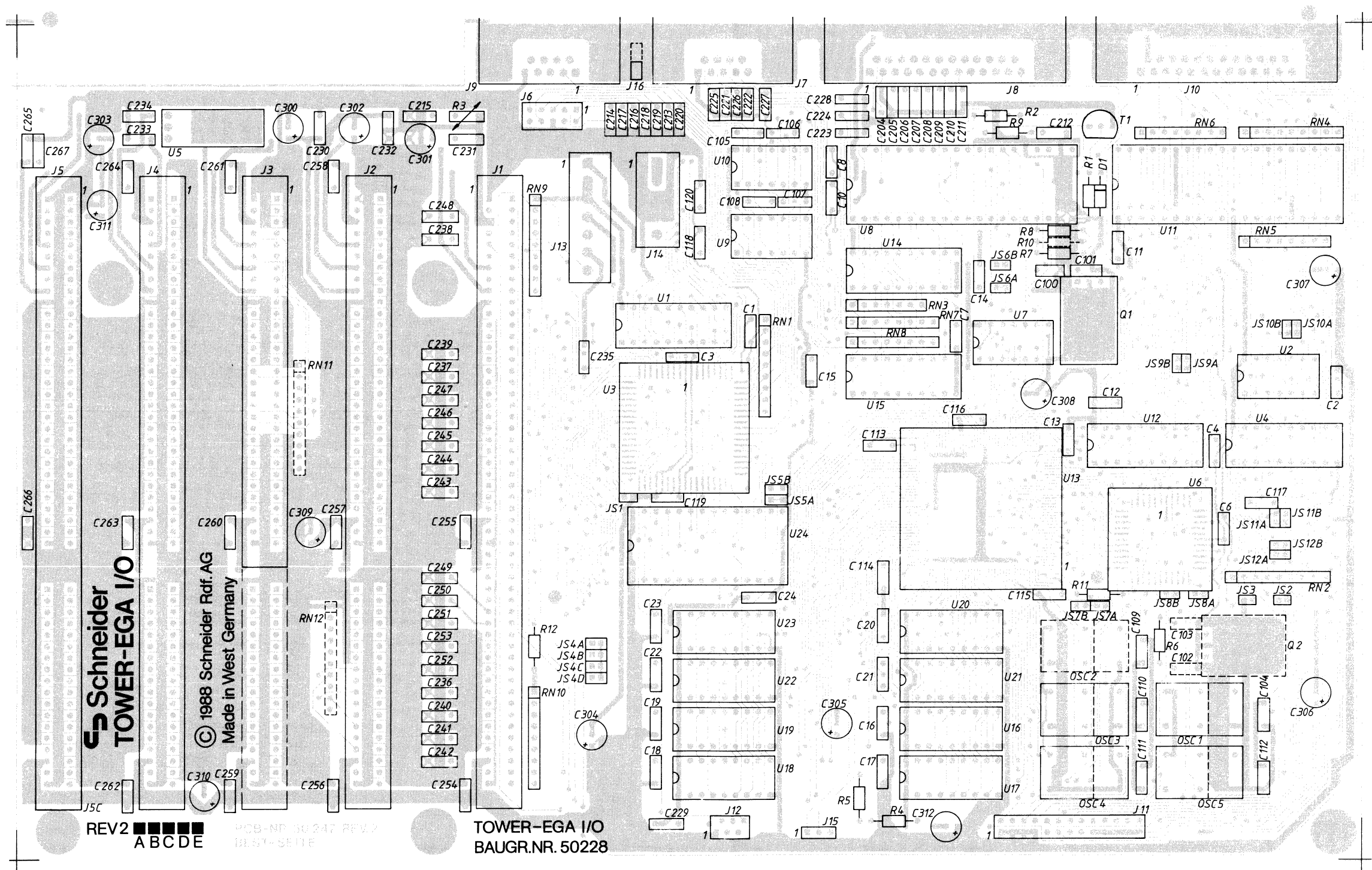
CPU
Soldering side



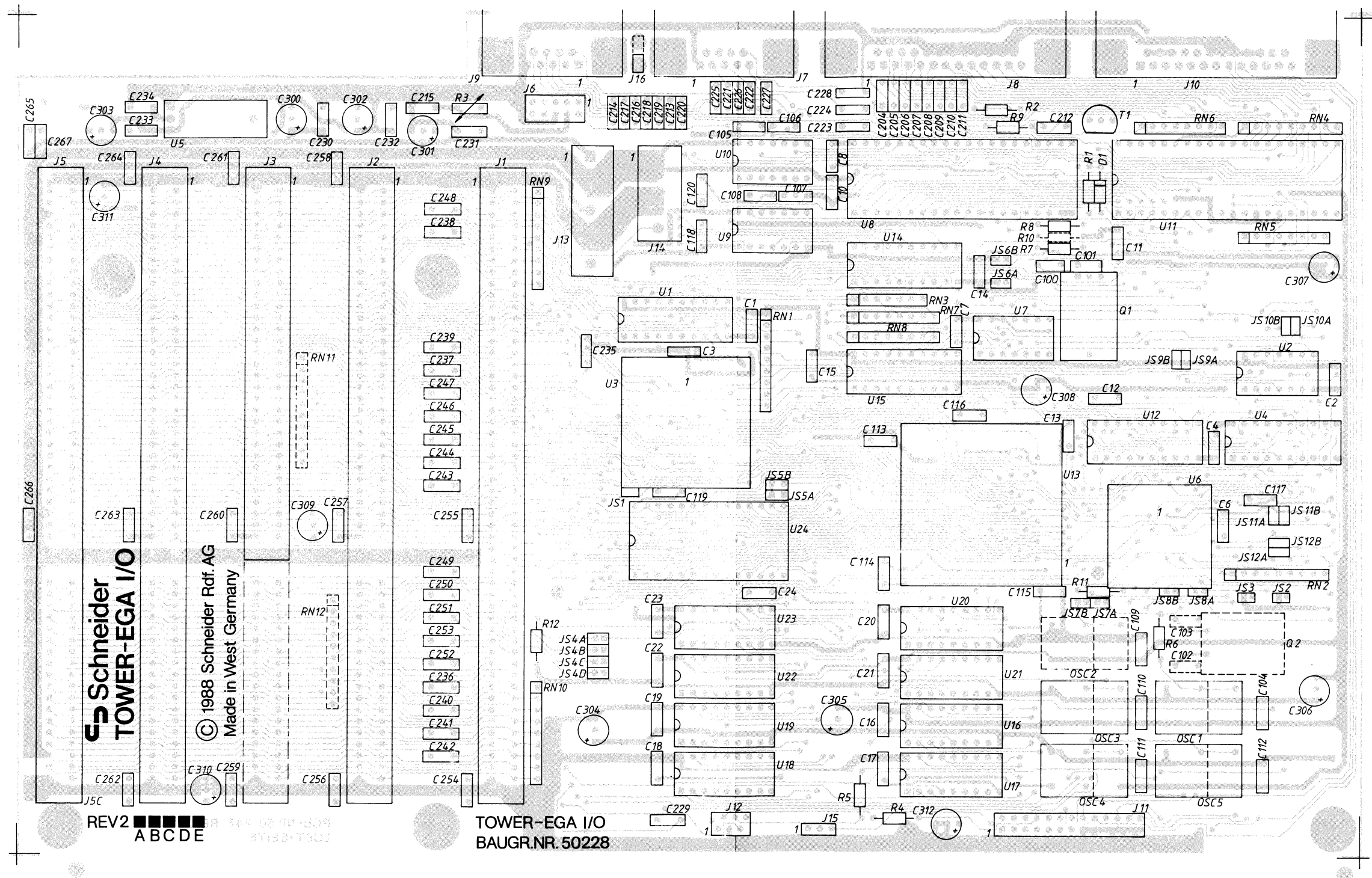
CPU
Component side



EGA I/O
Component side

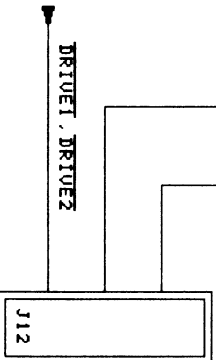
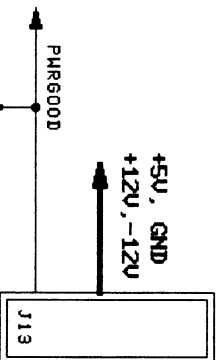
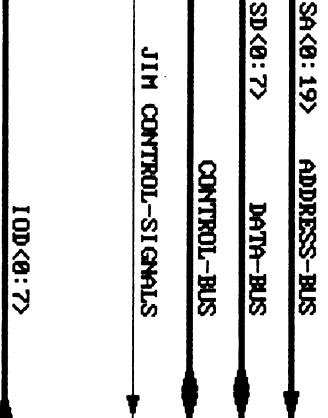
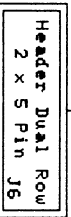
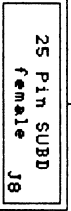
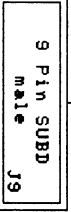
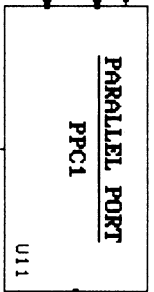
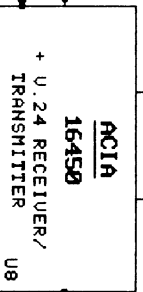
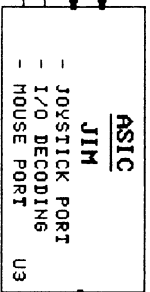
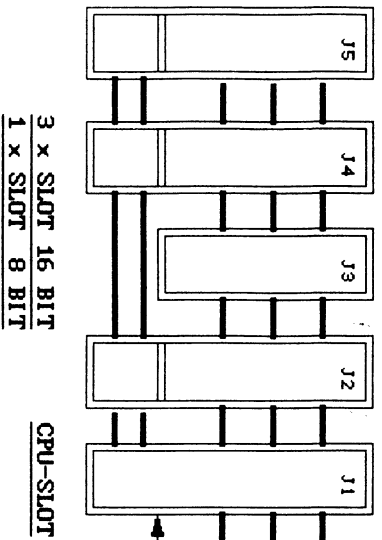


EGA I/O
Soldering side

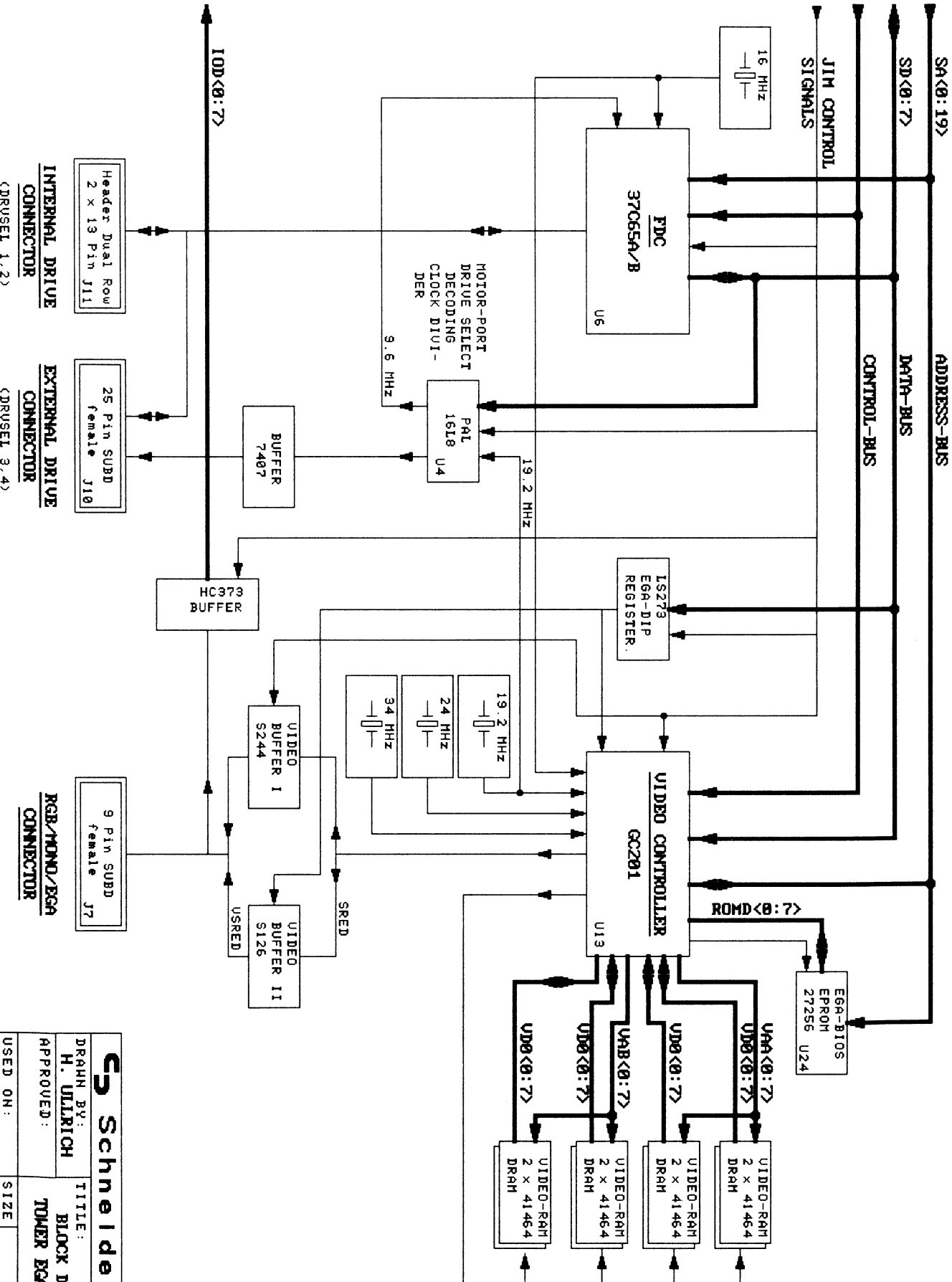


Ersatzteilliste für Platine Best. (D) Tower EGA I/O
Parts List P.C.B (D) Tower EGA I/O

Bestell-Nr. Part.-No.	Bezeichnung	Description	Zeich.-Pos. Ref.-No.	Preisgruppe
50 129 00	IC 74LS245	IC 74LS245	U 1	A 7
50 237 00	IC 7407	IC 7407	U 2	A 8
50 101 00	IC JIM TC17 GO 22AT	IC JIM TC17 GO 22AT	U 3	C 7
50 311 00	IC PAL 16 L8A Peog.	IC PAL 16 L8A Prog.	U 4	B 4
50 238 00	IC 7905 (TO220)	IC 7905 (TO220)	U 5	A 6
50 105 00	IC WD 37 C65A-JM00	IC WD 37 C65A-JM00	U 6	D 5
50 240 00	IC 74 F 126	IC 74 F 126	U 7	A 9
50 169 00	IC 16 C 450 PC	IC 16 C 450 PC	U 8	C 9
50 120 00	IC MC 1488	IC MC 1488	U 9	A 4
50 121 00	IC MC 1489	IC MC 1489	U 10	A 4
50 106 00	IC PPC 1	IC PPC 1	U 11	C 2
50 239 00	IC 74 LS 237	IC 74 LS 237	U 12	A 6
50 147 00	IC GC-201	IC GC-201	U 13	F 2
50 125 00	IC 74 HC 373	IC 74 HC 373	U 14	A 8
50 241 00	IC 74 F 244	IC 74 F 244	U 15	B 0
50 110 00	IC DRAM 64Kx4 120ns	IC DRAM 64Kx4 120ns	U 16-23	D 4
50 447 00	IC EPROM 256K prog.	IC EPROM 256K prog.	U 24	C 9
50 338 00	Diode 1 N 4148	Diode 1 N 4148	D 1	A 0
50 358 00	Trans BC 337 B	Trans BC 337 B	T 1	A 2
50 312 00	Quarz 1,8432 MHz	Quarz 1.8432 MHz	Q 1	B 6
50 313 00	Osz. 16,0 MHz	Osc. 16.0 MHz	OSC 1	C 0
50 337 00	Osz. 34,0 MHz	Osc. 34.0 MHz	OSC 3	C 0
50 315 00	Osz. 24,0 MHz	Osc. 24.0 MHz	OSC 4	C 0
50 314 00	Osz. 19,2 MHz	Osc. 19.2MHz	OSC 5	C 0
50 365 00	Elko rad. 10µF/25V	CE 10µF/25V	C 300-303	A 2
50 345 00	Elko rad. 47µF/16V	CE 47µF/16V	C 304-312	A 2
50 316 00	R-Netzwerk 8x10K	R-Network 8x10K	RN 1	A 3
50 317 00	R-Netzwerk 8x1K	R-Network 8x1K	RN 2	A 3
50 320 00	R-Netzwerk 6x680K	R-Network 6x680K	RN 3	A 2
50 319 00	R-Netzwerk 8x4K7	R-Network 8x4K7	RN 4, 9, 10	A 3
50 318 00	R-Netzwerk 4x33R	R-Network 4x33R	RN 5-8	A 2
50 372 00	R-Netzwerk 9x10K	R-Network 9x10K	RN 11, 12	A 2
50 321 00	Widerstand PTC 0R75	Resistor PTC 0R75	R 3	B 0
50 178 00	Buchse Cardedge 104 Pin	Socket Cardedge 104 Pin	J 1	B 5
50 179 00	Buchse Cardedge 98 Pin	Socket Cardedge 98 Pin	J 2, 4, 5	B 3
50 180 00	Buchse Cardedge 62 Pin	Socket Cardedge 62 Pin	J 3	B 1
50 252 00	Stiftleiste RM 2,54 10pol.	Connector RM 2.54 10-pol.	J 6	A 2
50 132 00	Buchse SUB D 9 Pin	Socket SUB D 9 Pin	J 7	A 9
50 133 00	Buchse SUB D 25 Pin	Socket SUB D 25 Pin	J 8, 10	B 2
50 131 00	Buchse SUB D 9 Pin	Socket SUB D 9 Pin	J 9	A 9
50 139 00	Stiftleiste RM 2,54 26pol.	Connector RM 2.54 26-pol.	J 11	A 4



Schneider 710-BK41			
DRAWN BY: H. ULLRICH	TITLE: BLOCK DIAGRAM		
APPROVED:	TOWER EGA-I/O PCB		
USED ON:	SIZE	REV	
TOWER AT	A3	S0 228	2
DATE: 09-29-88	SHEET: 1 of 2		



Schneider

DRAWN BY:

H. ULRICH

APPROVED:

TOMER AT

DATE: 09-29-88

TITLE:

BLOCK DIAGRAM

TOMER 68A-1/0 PCB

SIZE

A 3

USED ON:

50 228

REV

2

TIO-BLK2

A

B

C

D

1

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
1	ADVANCED ENGINEERING RELEASE	04-27-88	RME
2	UPDATE	05-04-88	RME
3	UPDATE	05-24-88	RME
4	UPDATE, CORRECTIONS, ADDED BLOCK CAPS	06-22-88	H. ULLRICH
5	NEW LAYOUT (PCB REV.2)	07-11-88	RME
6	CHANGED 2 SIGNAL NAMES, ADDED PAGE REFERENCES	08-10-88	H. ULLRICH
7	CHANGED R8 VALUE TO 1K, ADDED C268 (C268 IS NOT INCLUDED IN THE LAYOUT OR SILKSCREEN BUT AN ADDON REMARK!)	09-15-88	H. ULLRICH
8	ADDED C121 (NOT INCLUDED IN LAYOUT OR SILKSCREEN - ADD-ON REMARK!) BUG FIX FOR UC-001 VIDEO CHIP	11-18-88	B. ASSMANN

DRAWING FILES: CONTENTS:

TI0_81.DWG	THIS SHEET
TI0_82.DWG	ASIC JIM
TI0_83.DWG	FLOPPY INTERFACE
TI0_84.DWG	SERIAL INTERFACE
TI0_85.DWG	PARALLEL INTERFACE
TI0_86.DWG	VIDEO CONTROLLER
TI0_87.DWG	VIDEO RAM, CHAR. ROM
TI0_88.DWG	VIDEO INTERFACE
TI0_89.DWG	CONNECTORS I
TI0_810.DWG	CONNECTORS II
TI0_811.DWG	CPU SLOT
TI0_812.DWG	NORMAL SLOT
TI0_813.DWG	NORMAL SLOT
TI0_814.DWG	NORMAL SLOT
TI0_815.DWG	NORMAL SLOT
TI0_816.DWG	BLOCK CAPS, SPARE GATES

Schneider

TI0-81

DRAWN BY:
B. ASSMANN

APPROVED:

TITLE:

SCHEMATIC
TOWER-BGA/10

USED ON:

TOWER-AT

SIZE

A3

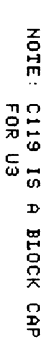
REV

50 228 8

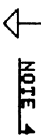
DATE: 11-18-88

SHEET: 1 of 16

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100



2 3 4 5 6 7 8



```
JS2 OPEN : 125 ms
JS2 CLOSED: 187 ms
```

```

2) JS3 SELECTS 2 SPEED SPINDLE DRIVE IF CLOSED
3) J15 SELECTS RPH POLARITY

```

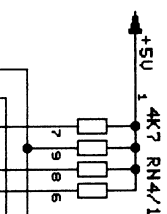
JUMPER IN POS. 1-2: 1.2MB OR AT TYPE 1.44MB
JUMPER IN POS. 2-3: PS/2 TYPE 1.44MB

4) C104 IS BLOCK CAP TO OSC1
5) Q2, C102, C103 ONLY REQUIRED IF JS0A OPEN, JS0B CLOSED

T10-83

SERIAL INTERFACE

COMOUT[2]
COMINT[2]



RESETDRU[2,3,11-15]
RESOUT[2,5,6]

10D<0:7>[2,5,6,8]

0 1 2 3 4 5 6 7
D0 D1 D2 D3 D4 D5 D6 D7

19 DOSTR 22 DISTR 25 ADS 28 A0 UCC=40 27 A1 GND=20 26 A2

11 SOUT 12 13 U9/4 11

9 10 12 13 U9/3 8 11

10 12 13 U9/4 11

10 12 13 U9/4 11

10 12 13 U9/4 11

SA<0:2>[2,3,5-7,11-15]

19 DOSTR 22 DISTR 25 ADS 28 A0 UCC=40 27 A1 GND=20 26 A2

11 SOUT 12 13 U9/4 11

9 10 12 13 U9/3 8 11

10 12 13 U9/4 11

10 12 13 U9/4 11

10 12 13 U9/4 11

10 12 13 U9/4 11

CS-COM[2]
10H-DIV[2]
10R-DIV[2]

14 CS2 18 DOSTR 21 DISTR 26 A2

16 XTAL1 17 XTAL2 15

16 XTAL1 17 XTAL2 15

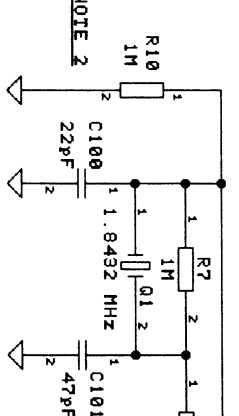
16 XTAL1 17 XTAL2 15

16 XTAL1 17 XTAL2 15

16 XTAL1 17 XTAL2 15

16 XTAL1 17 XTAL2 15

16 XTAL1 17 XTAL2 15



NOTE 2

NOTE 2

NOTE 2

NOTE 2

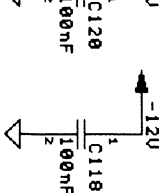
NOTE 2

NOTE 2

NOTE 2

NOTES: 1) C118 AND C120 ARE
BLOCK CAPS FOR U9

2) R10 ASSEMBLED ONLY IF
REQUIRED



NOTE 1

NOTE 1

NOTE 1

NOTE 1

Schneider

DRAWN BY:
H. ULRICH

APPROVED:

TITLE:
SCHEMATIC
TIMER-BGA/10

USED ON:

TIMER-AT

SIZE

A3

REV

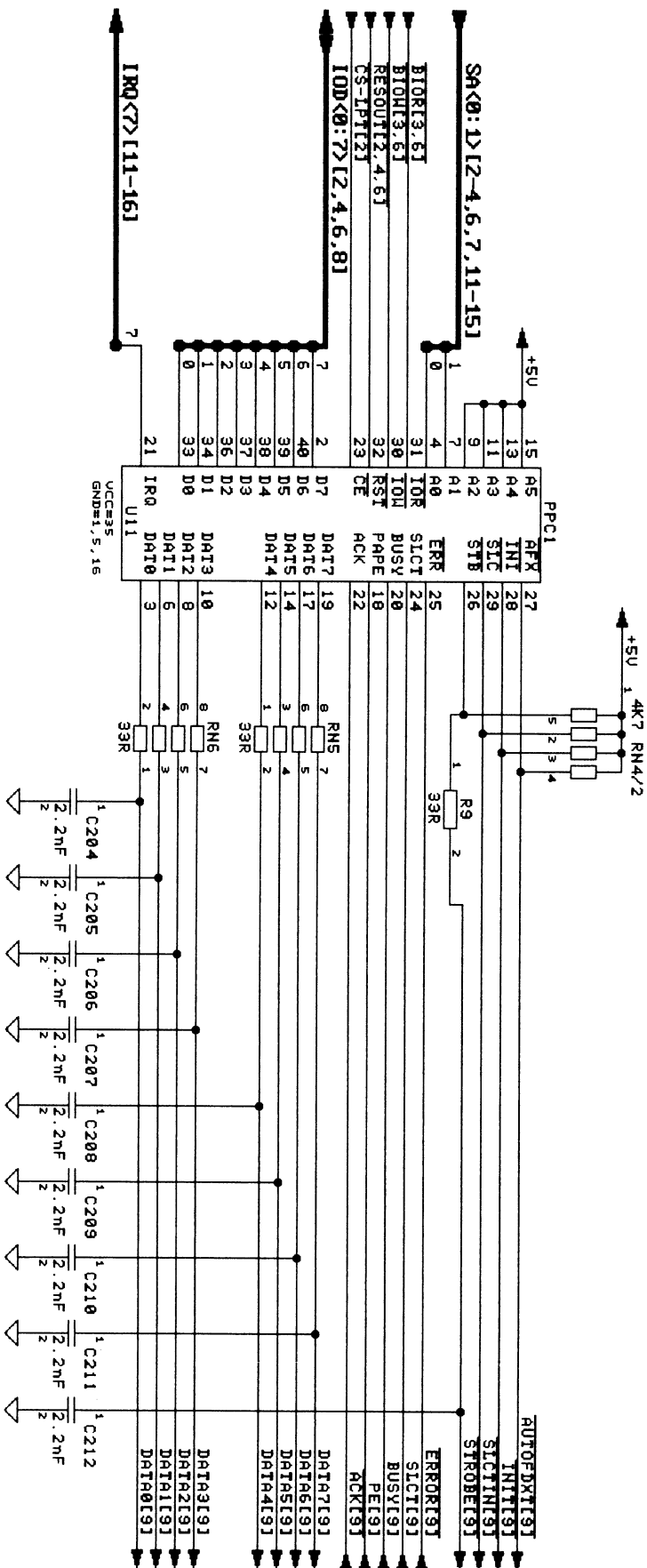
8

DATE: 11-18-88

SHEET: 4 OF 16

TIO-84

PARALLEL INTERFACE



Schneider

DRAWN BY:
H. ULLRICH

APPROVED:

SCHNEIDER
TOWER-EGA/10

USED ON:
TOWER-AT

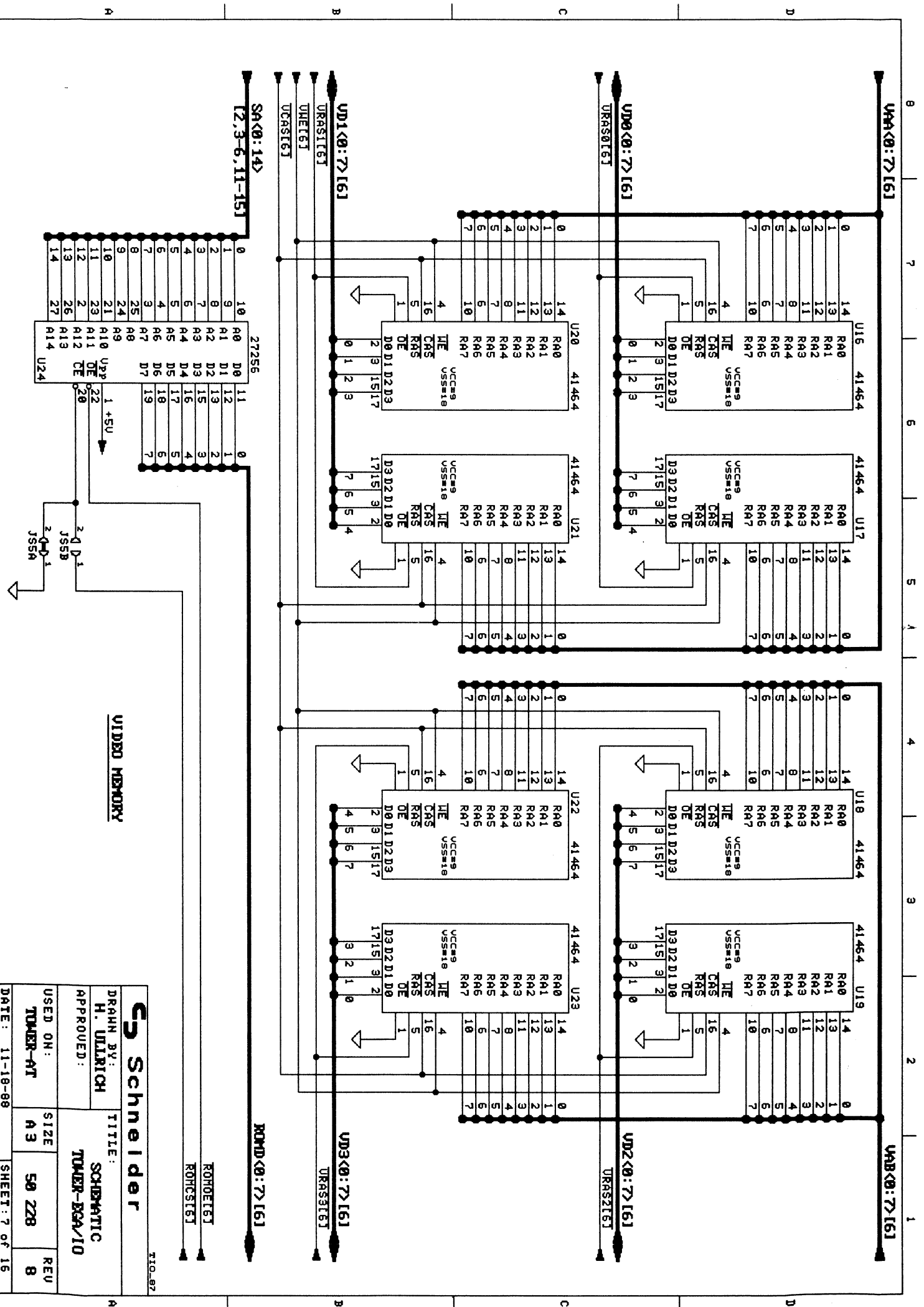
SIZE
A3

50 228

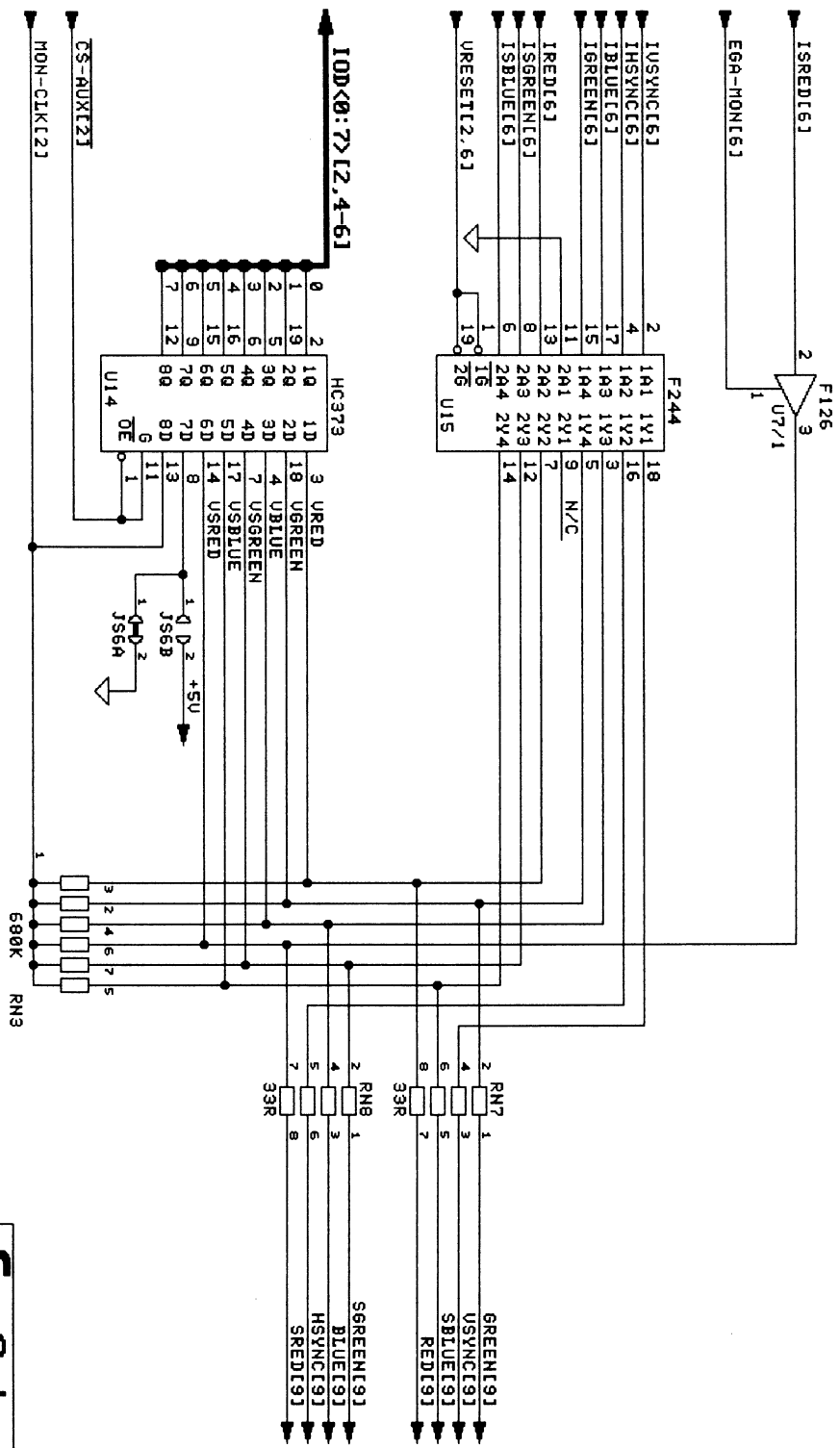
REV
8

DATE: 11-18-88

SHEET: 5 of 16



VIDEO INTERFACE



Schneider

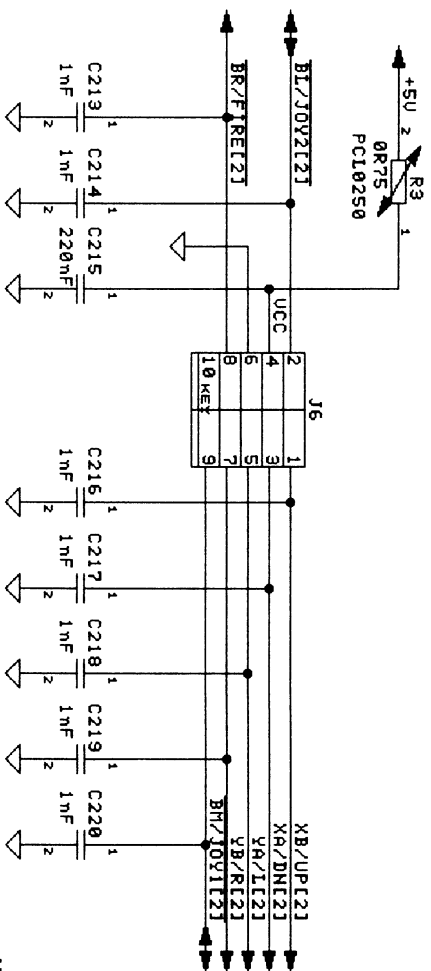
DRAWN BY: H. ULRICH
TITLE: SCHMATIC
TOWER-EGA/10

APPROVED:

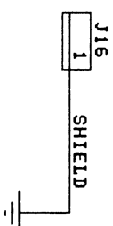
USED ON:	SIZE	REV
TOWER-AT	A3	50 228
DATE: 11-18-88	SHEET: 8 OF 16	8

MOUSE/JYSTICK
HEADER DUAL ROW 2x5 PIN

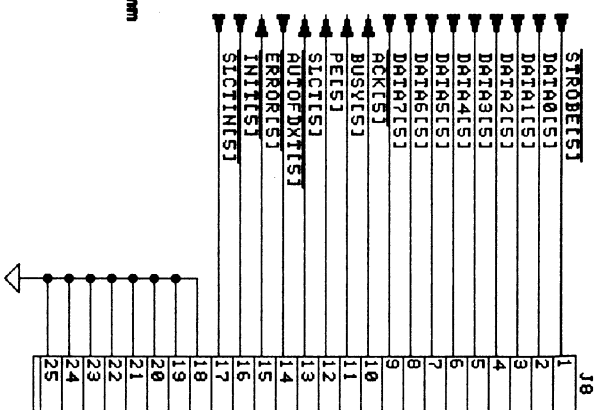
CURRENT LIMITING PIC



SHIELD CONNECTOR
HEADERS FASTON 2.8 x 0.8 mm

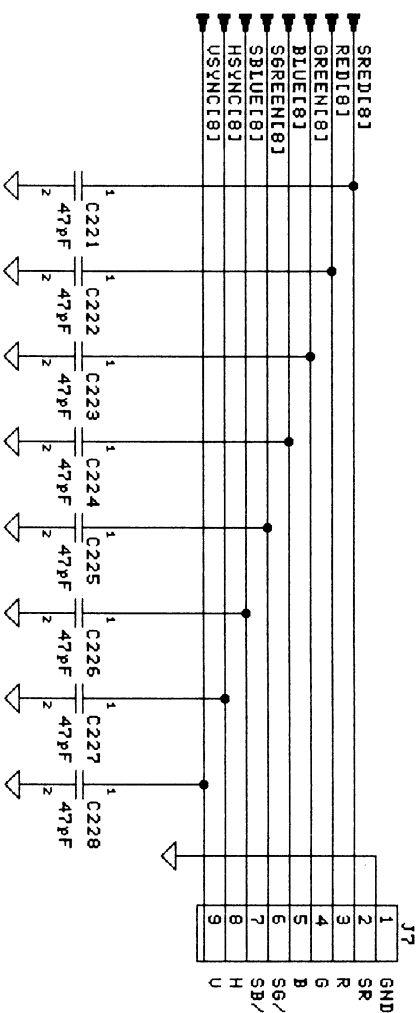


PARALLEL PORT
25 PIN SUBD CONN. FEMALE

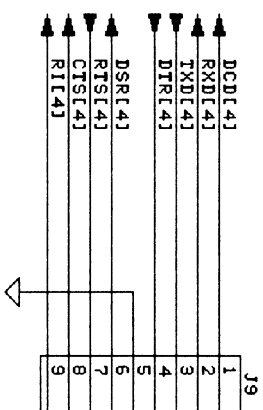


VIDEO MONO/RGB

9 PIN SUBD CONN. FEMALE



SERIAL PORT
9 PIN SUBD CONN. MALE



CONNECTORS I

Schneider

DRAWN BY:
H. ULLRICH

APPROVED:

TITLE:
SCHEMATIC
TOWER-EGA/10

USED ON:
TOWER-AT

SIZE
A3

50 228

REV
8

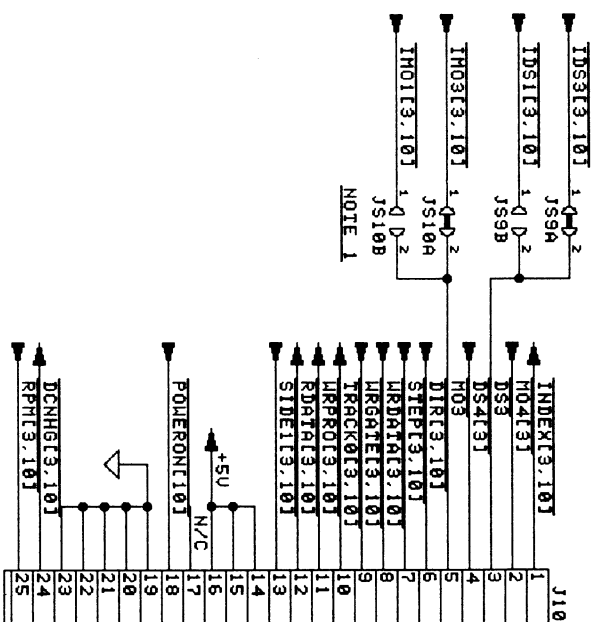
DATE: 11-10-88

SHEET: 9 of 16

T10-89

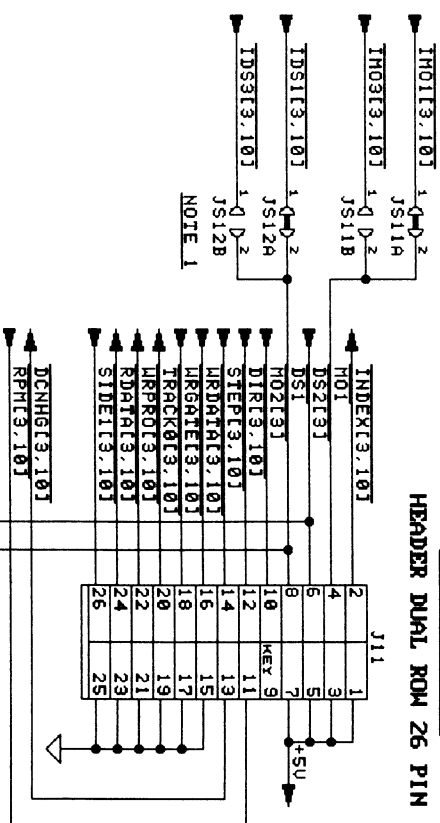
FLOPPY EXTERN

25 PIN SUBD CONN. FEMALE

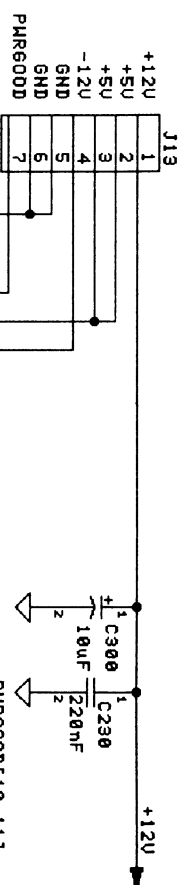


FLOPPY INTERN

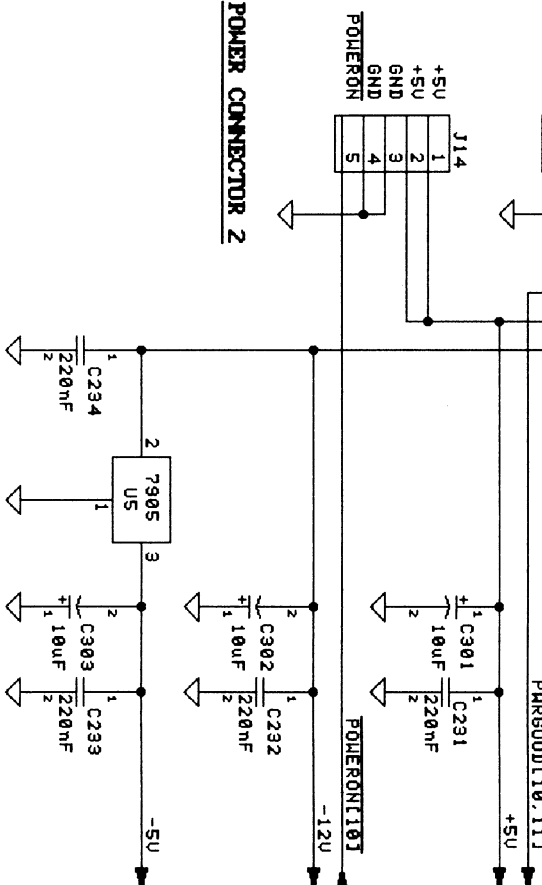
HEADER DUAL ROM 26 PIN



POWER CONNECTOR 1

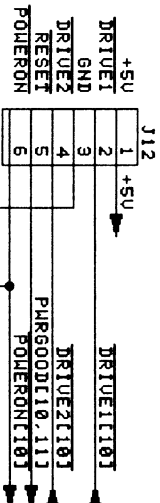


POWER CONNECTOR 2



LED CONNECTOR

HEADER MICRO MATCH 6 PIN



CONNECTORS II

Schneider

DRAWN BY:
H. ULRICH

APPROVED:

USED ON:

DATE: 11-18-88

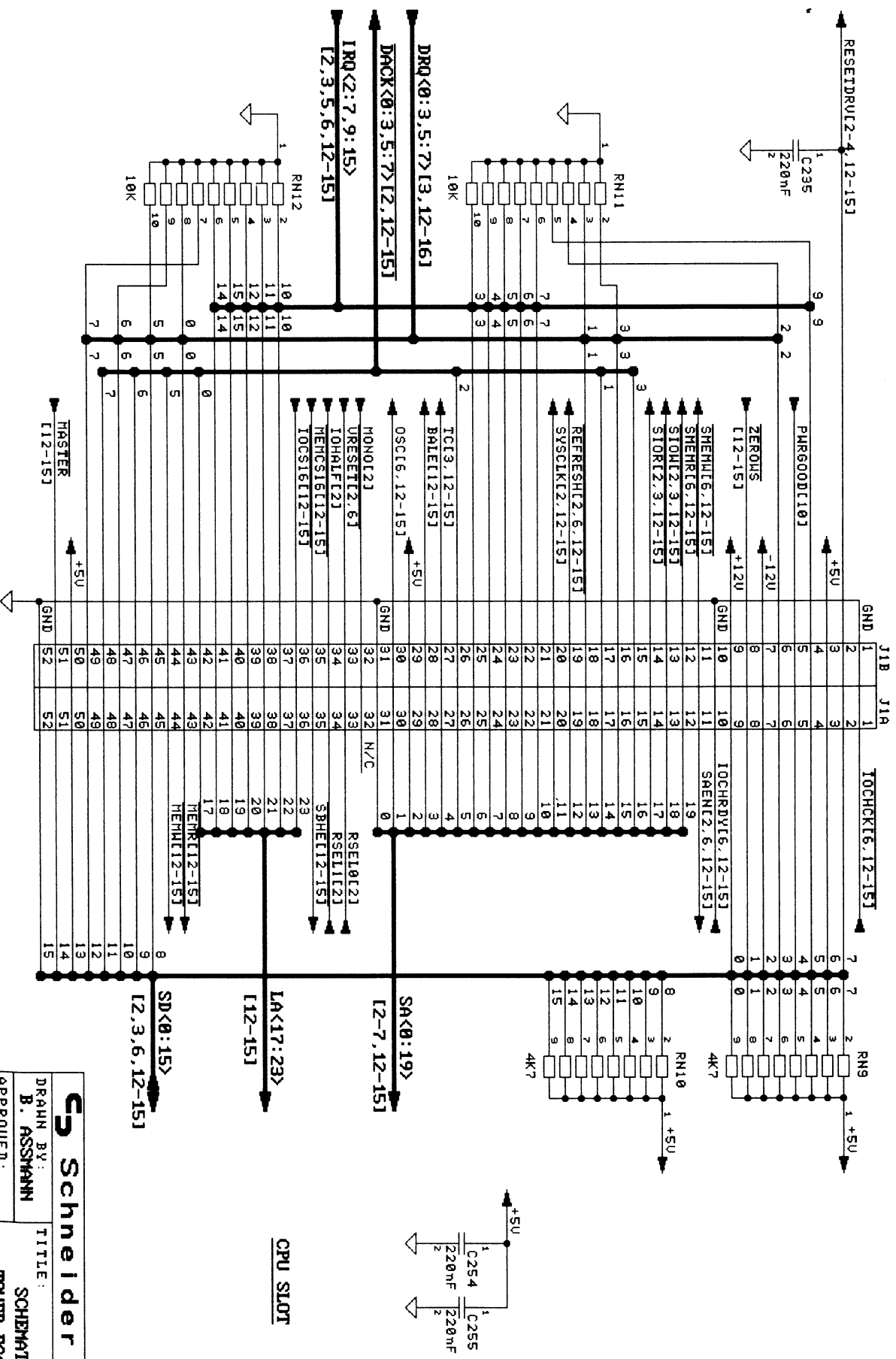
TITLE:
SCHEMATIC
TOWER-BGA/10

SIZE
A3

50 228

REV
8

SHEET: 10 of 16



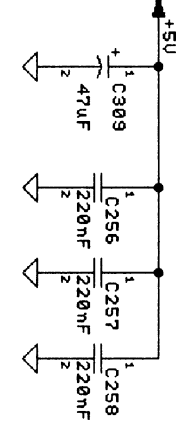
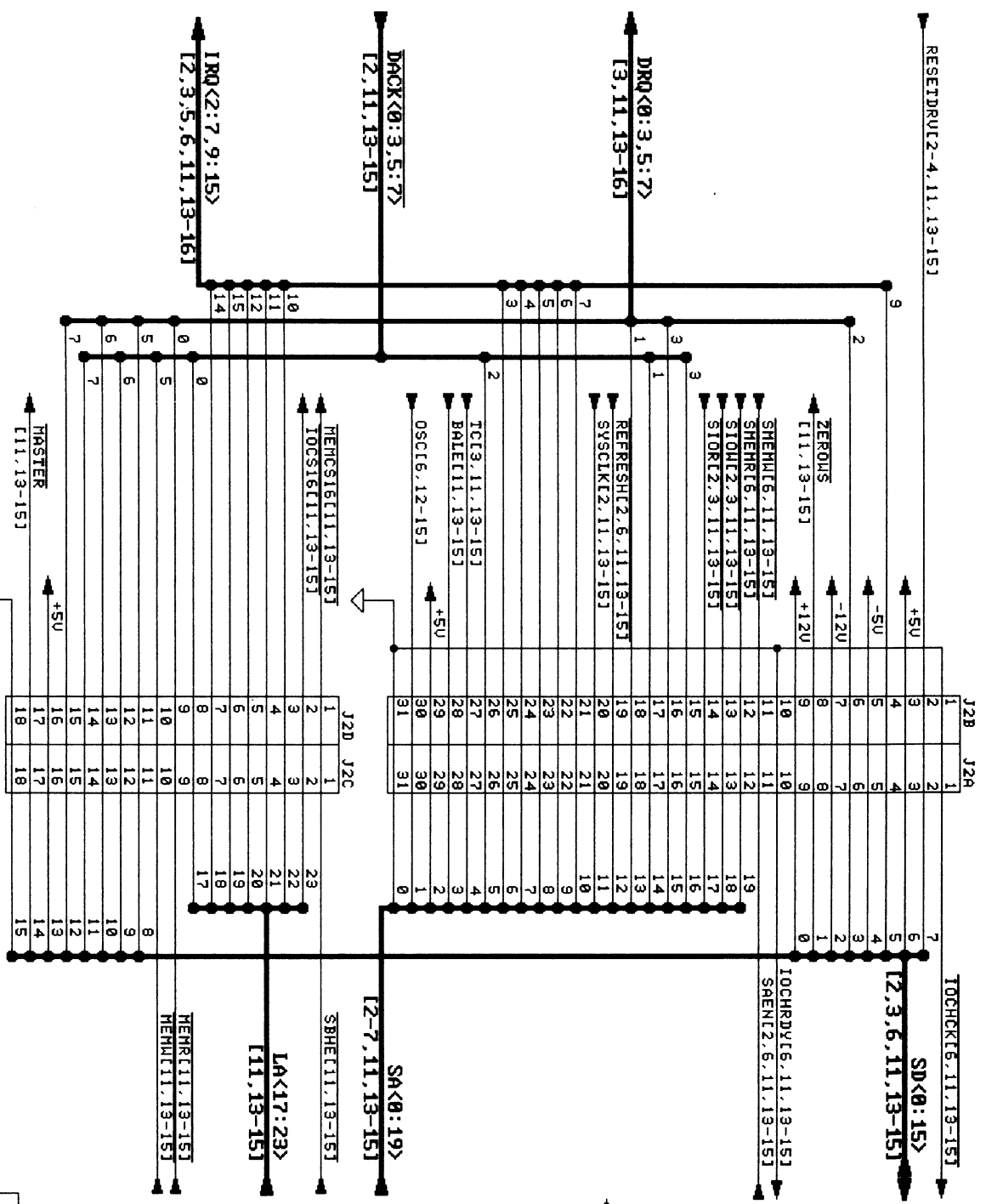
Schneider

T10-811

TITLE: SCHEMATIC
 TOWER-EGA/10

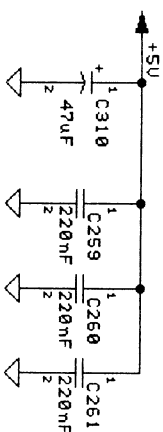
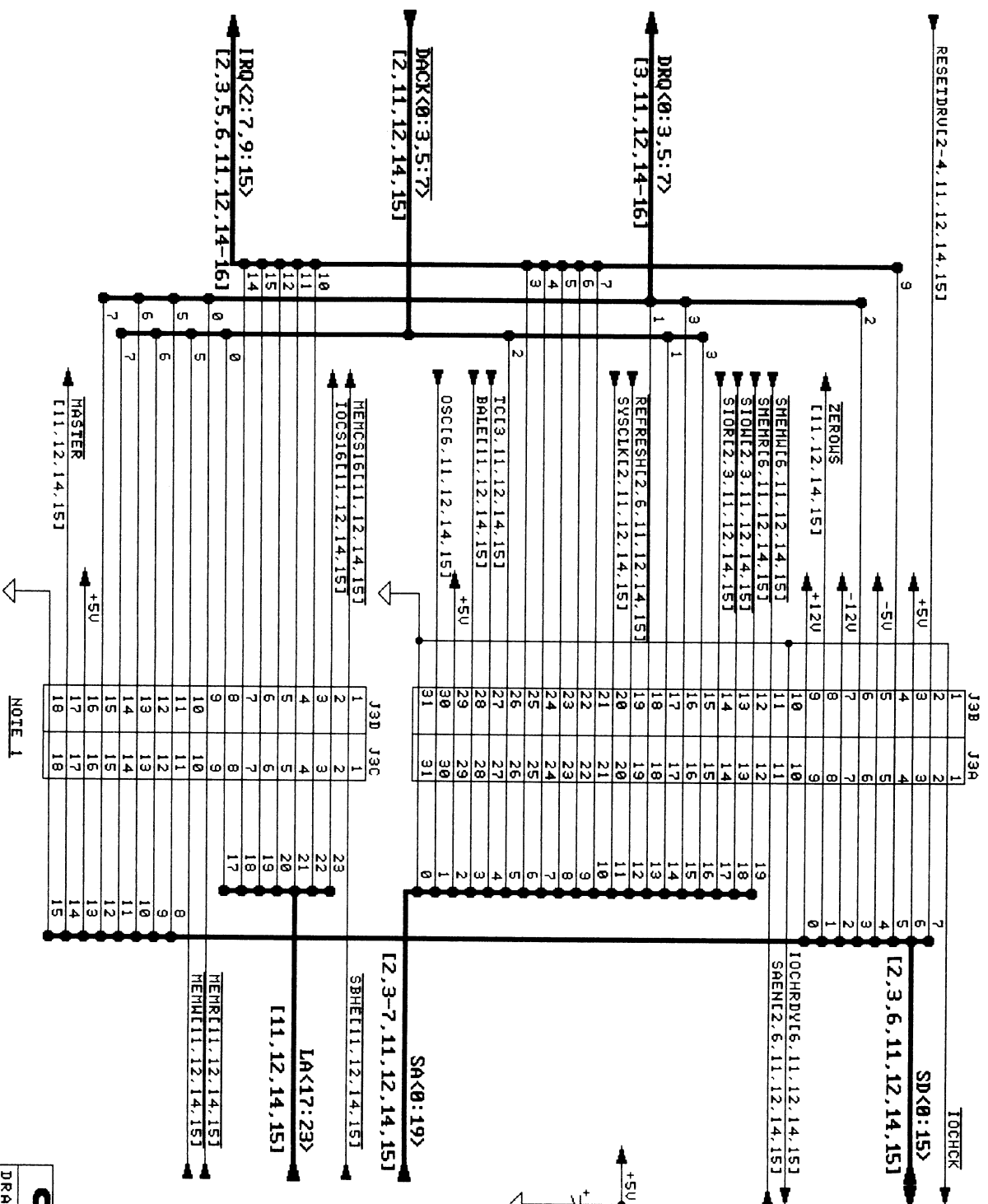
DRAWN BY: B. ASSMANN
 APPROVED:

USED ON: TOWER-AT
 SIZE: A3
 50' 228
 REV: 8



NORMAL SLOT

Schneider			
DRAWN BY: H. ULRICH		TITLE: SCHEMATIC TOWER-EGA/10	
APPROVED:		REV:	
USED ON:	SIZE:	REV:	REV:
TOWER-AT	A3	50 228	8
DATE: 11-18-88		SHEET: 12 OF 16	



NORMAL SLOT

NOTES: 1) CARDEGE CONNECTOR J3C-D NOT ASSEMBLED

NOTE 1

Schneider

DRAWN BY:

H. ULTRICH
APPROVED:

SCHEMATIC

11557	11558	11559	11560	11561	11562	11563	11564	11565	11566	11567	11568	11569	11570	11571	11572	11573	11574	11575	11576	11577	11578	11579	11580	11581	11582	11583	11584	11585	11586	11587	11588	11589	11590	11591	11592	11593	11594	11595	11596	11597	11598	11599	11600	11601	11602	11603	11604	11605	11606	11607	11608	11609	11610	11611	11612	11613	11614	11615	11616	11617	11618	11619	11620	11621	11622	11623	11624	11625	11626	11627	11628	11629	11630	11631	11632	11633	11634	11635	11636	11637	11638	11639	11640	11641	11642	11643	11644	11645	11646	11647	11648	11649	11650	11651	11652	11653	11654	11655	11656	11657	11658	11659	11660	11661	11662	11663	11664	11665	11666	11667	11668	11669	11670	11671	11672	11673	11674	11675	11676	11677	11678	11679	11680	11681	11682	11683	11684	11685	11686	11687	11688	11689	11690	11691	11692	11693	11694	11695	11696	11697	11698	11699	11700	11701	11702	11703	11704	11705	11706	11707	11708	11709	11710	11711	11712	11713	11714	11715	11716	11717	11718	11719	11720	11721	11722	11723	11724	11725	11726	11727	11728	11729	11730	11731	11732	11733	11734	11735	11736	11737	11738	11739	11740	11741	11742	11743	11744	11745	11746	11747	11748	11749	11750	11751	11752	11753	11754	11755	11756	11757	11758	11759	11760	11761	11762	11763	11764	11765	11766	11767	11768	11769	11770	11771	11772	11773	11774	11775	11776	11777	11778	11779	11780	11781	11782	11783	11784	11785	11786	11787	11788	11789	11790	11791	11792	11793	11794	11795	11796	11797	11798	11799	11800	11801	11802	11803	11804	11805	11806	11807	11808	11809	11810	11811	11812	11813	11814	11815	11816	11817	11818	11819	11820	11821	11822	11823	11824	11825	11826	11827	11828	11829	11830	11831	11832	11833	11834	11835	11836	11837	11838	11839	11840	11841	11842	11843	11844	11845	11846	11847	11848	11849	11850	11851	11852	11853	11854	11855	11856	11857	11858	11859	11860	11861	11862	11863	11864	11865	11866	11867	11868	11869	11870	11871	11872	11873	11874	11875	11876	11877	11878	11879	11880	11881	11882	11883	11884	11885	11886	11887	11888	11889	11890	11891	11892	11893	11894	11895	11896	11897	11898	11899	11900	11901	11902	11903	11904	11905	11906	11907	11908	11909	11910	11911	11912	11913	11914	11915	11916	11917	11918	11919	11920	11921	11922	11923	11924	11925	11926	11927	1192
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USED ON:
TOWER-AT

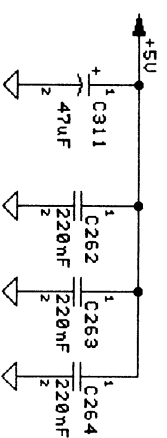
12E
A3

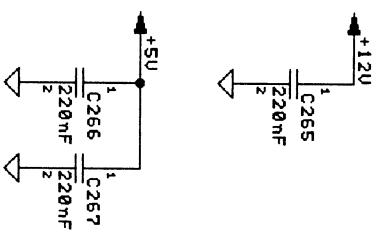
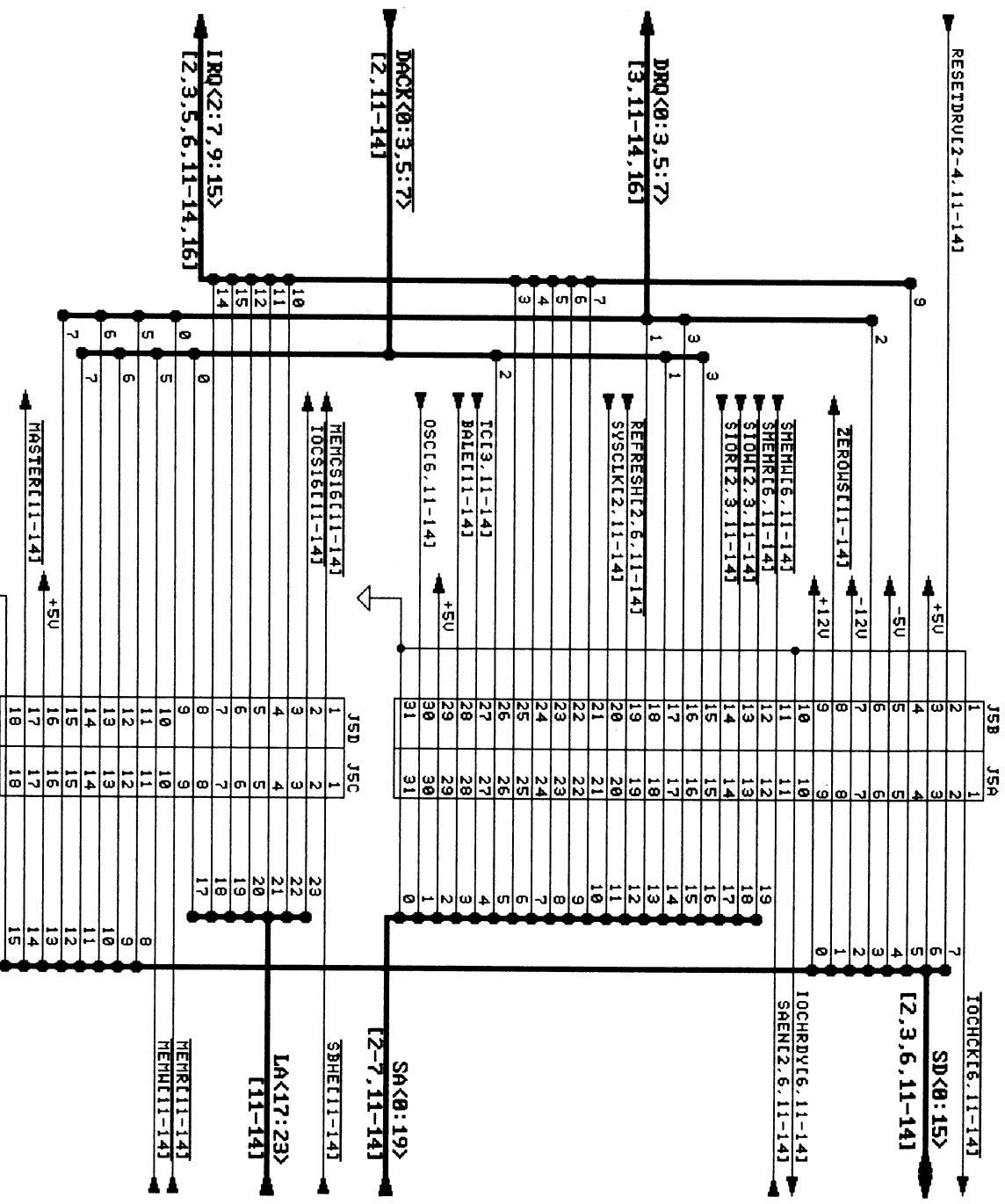
REV 8 50 228

88

DATE: 11-18-88

SHEET: 13 of 16





NORMAL SLOT

Schneider

DRAWN BY:
H. ULRICH

APPROVED:

TITLE:
SCHEMATIC
TOWER-EGA/10

USED ON:

TOWER-AT

SIZE
A3

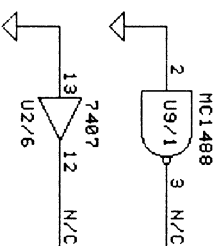
NO
50 228

REV
8

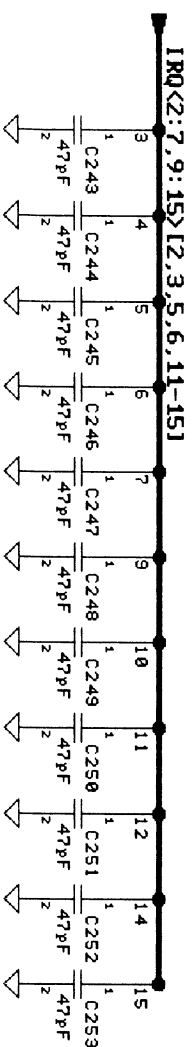
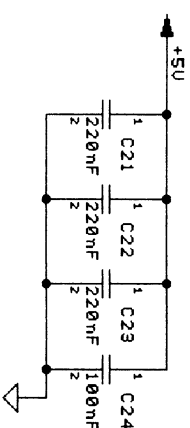
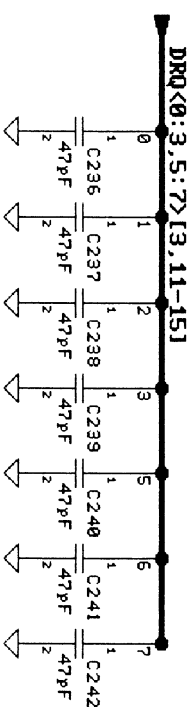
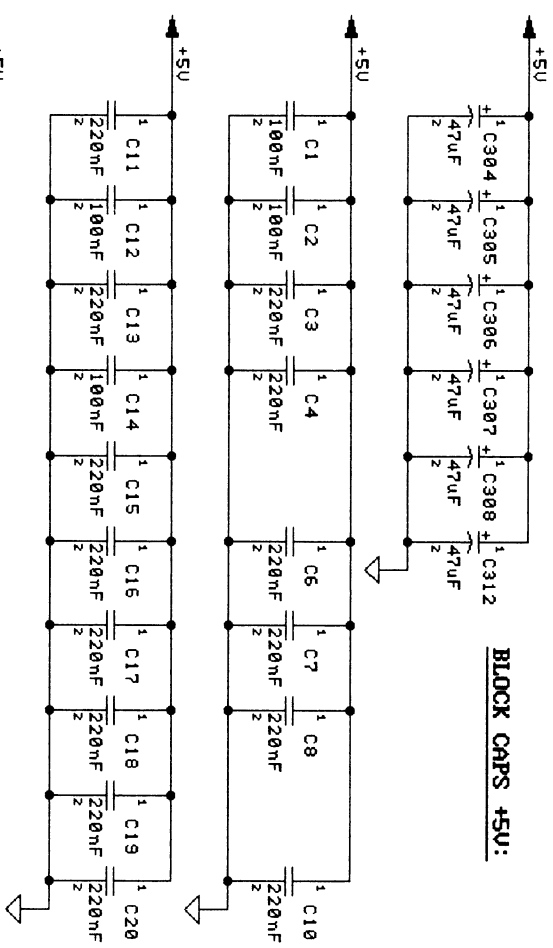
DATE: 11-18-88

SHEET: 15 of 16

SPARE GATES



BLOCK CAPS +5V:



Schneider

710-816

DRAWN BY:
B. ASSMANN

APPROVED:

TITLE:
SCHEMATIC
TOWER-EGA/10

USED ON:

TOWER-AT

SIZE
A3

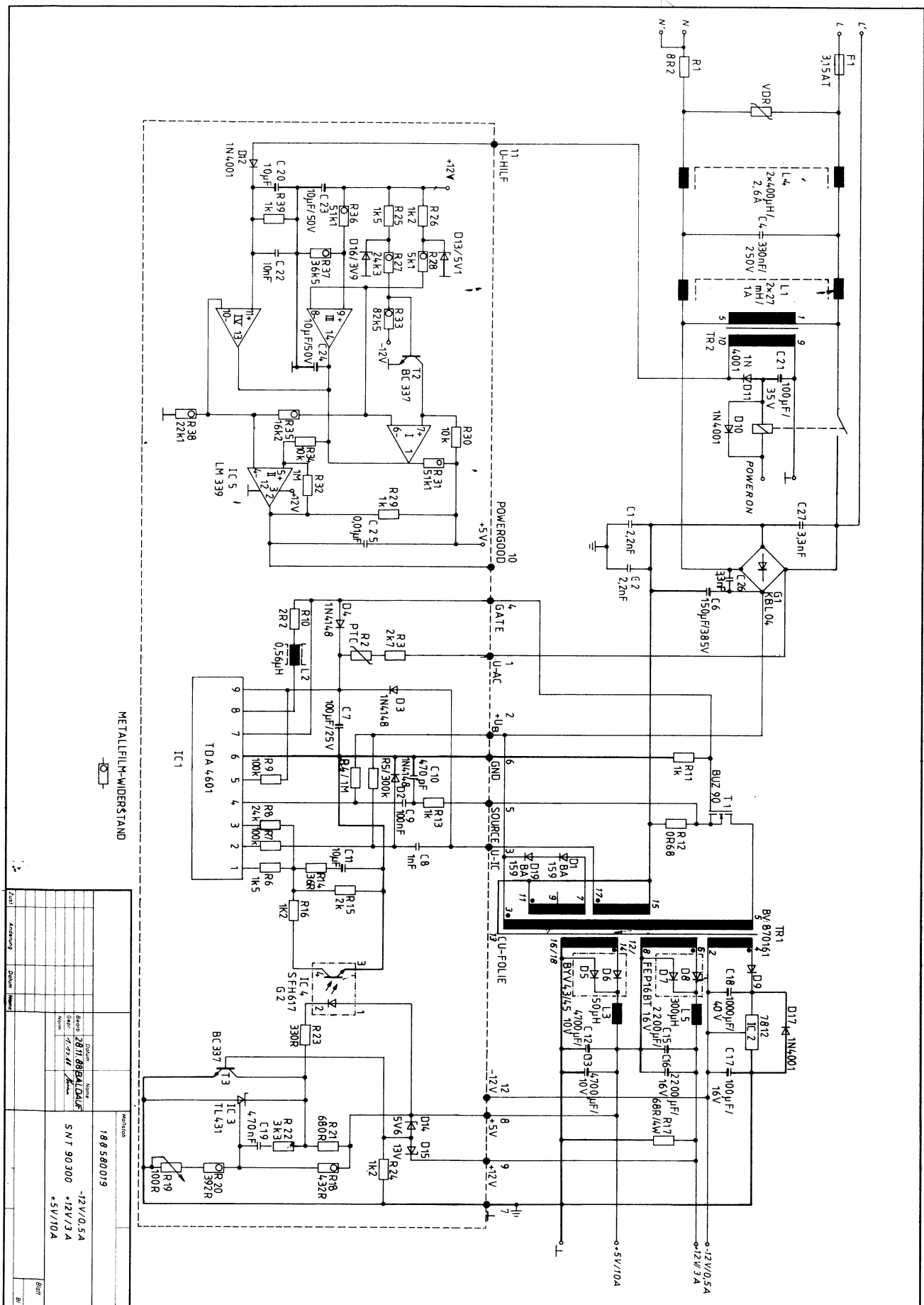
50 228

REV
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DATE: 11-18-88

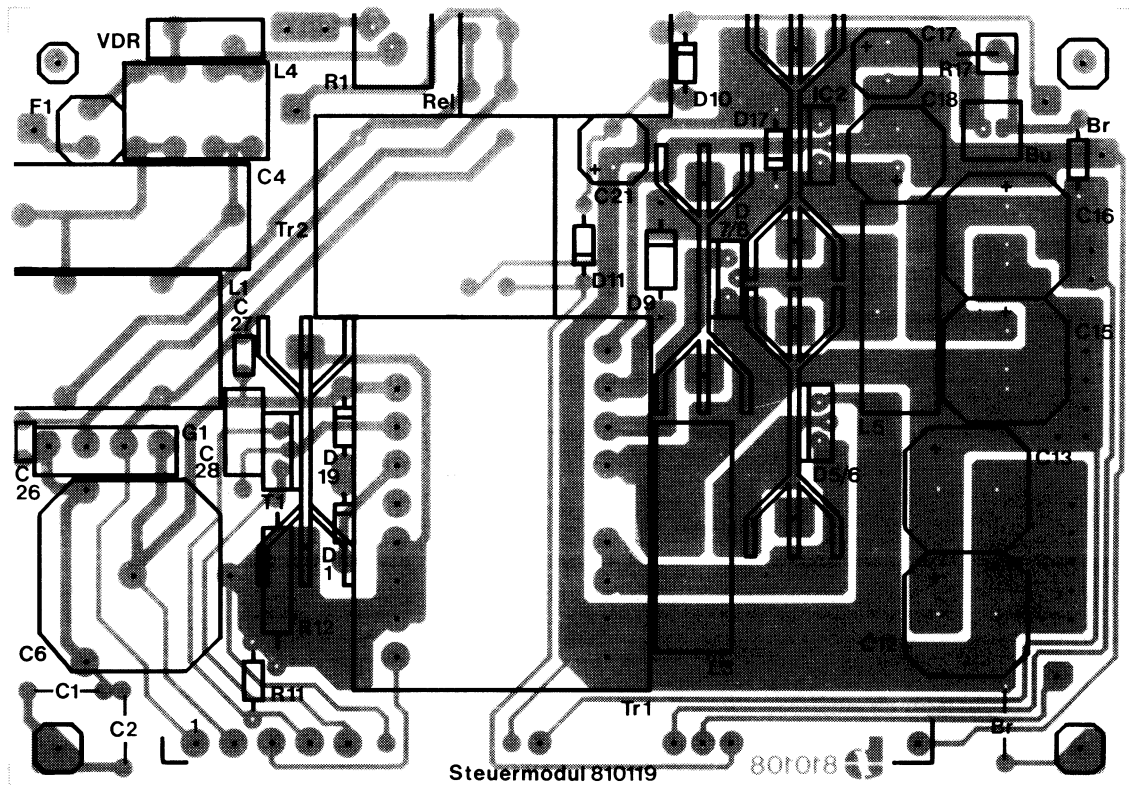
SHEET: 16 OF 16

Power supply SCD–SNT 90/B03

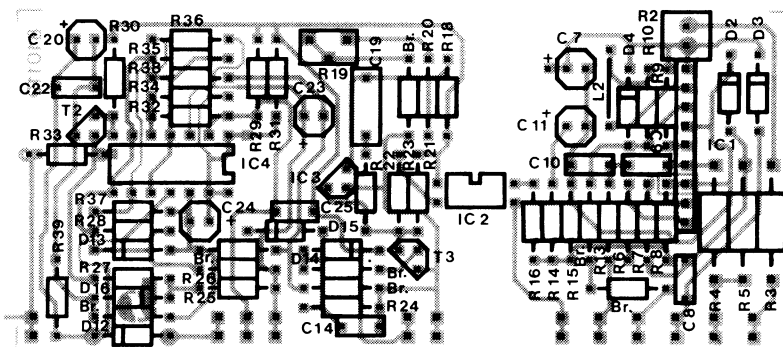


Power supply SCD-SNT 90/B03

Component side



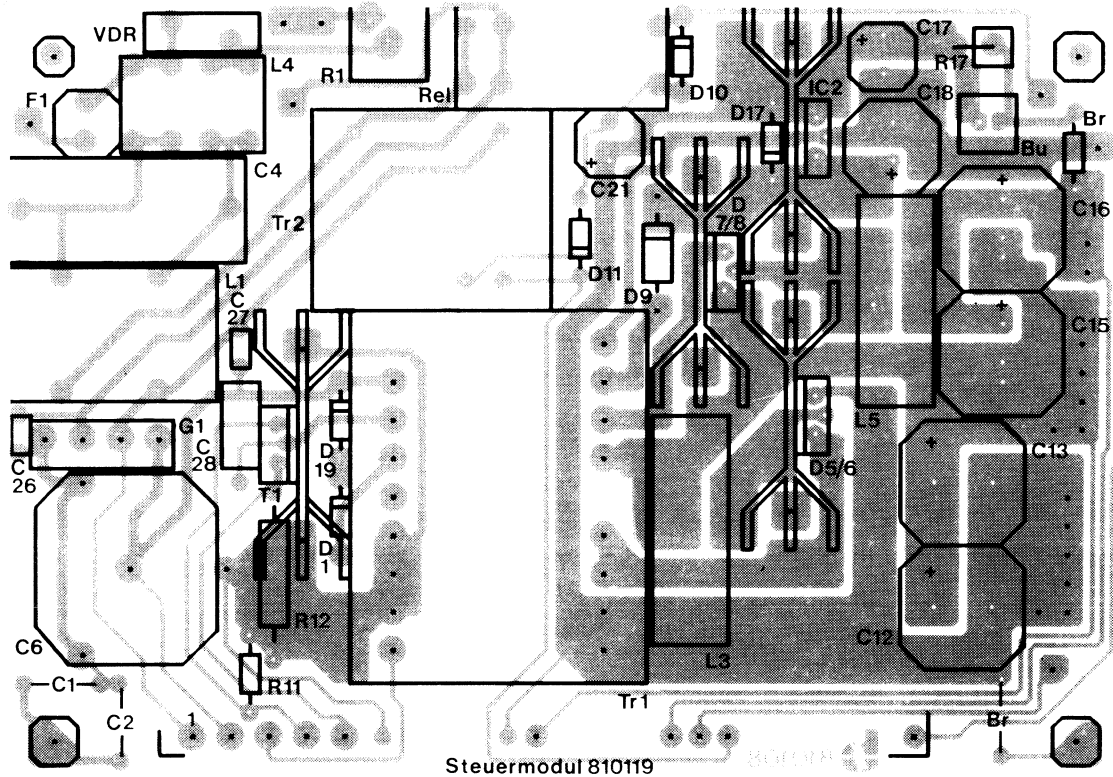
Schaltnetzteil „Tower“ SCD-SNT 90/01 B03 Id.580018 Ident Nr.7270-50215



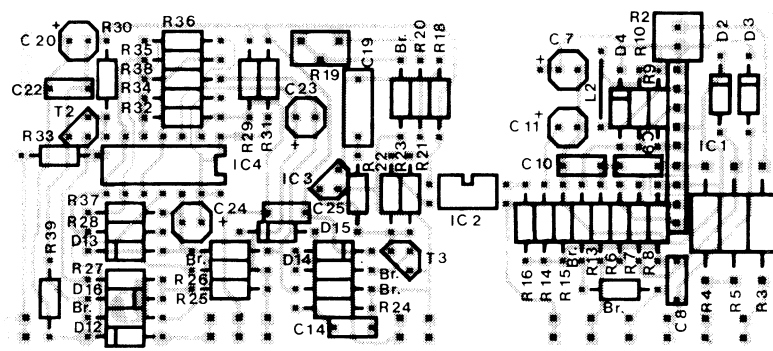
Steuermodul 810119

Power supply SCD-SNT 90/B03

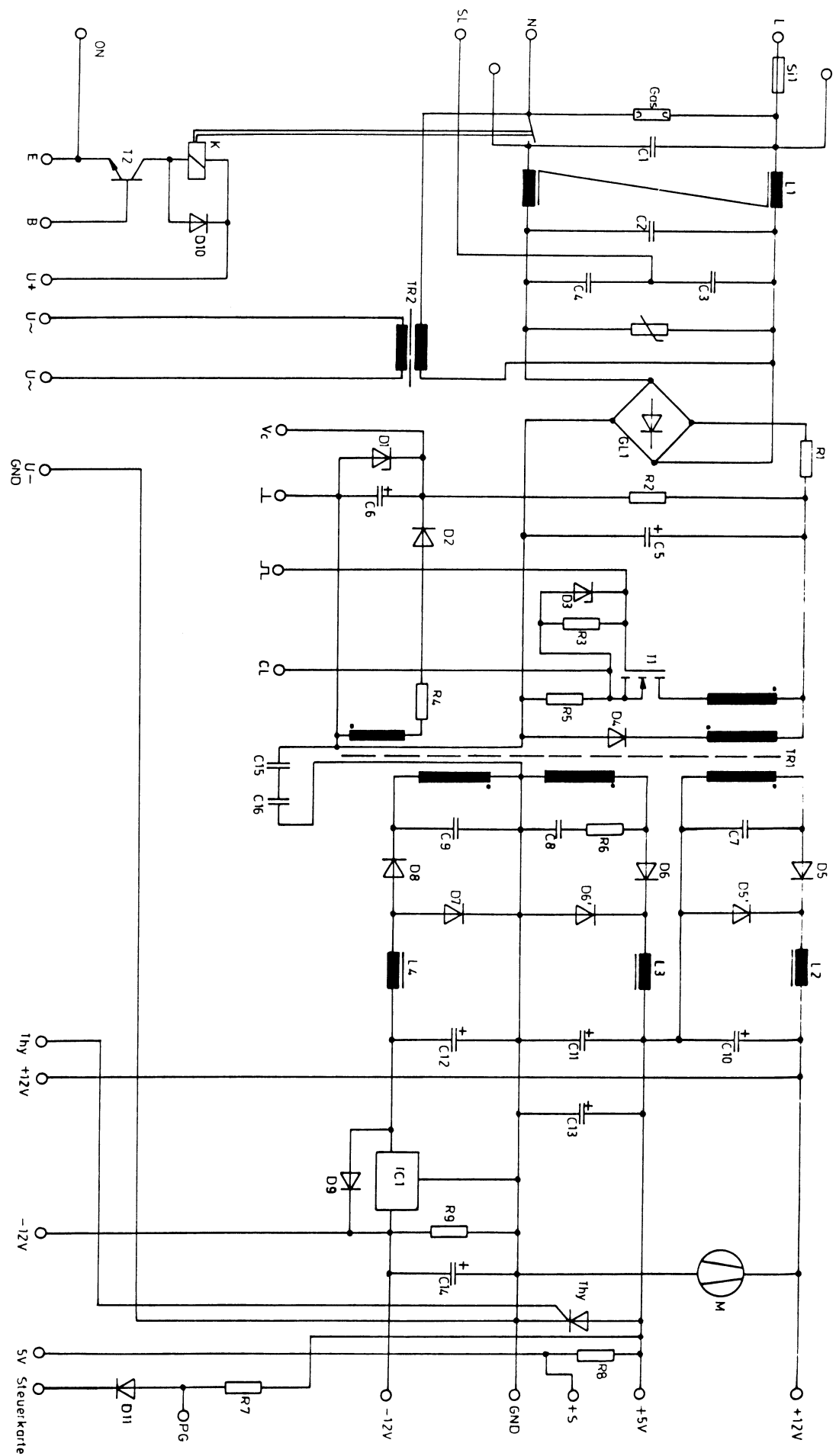
Component side



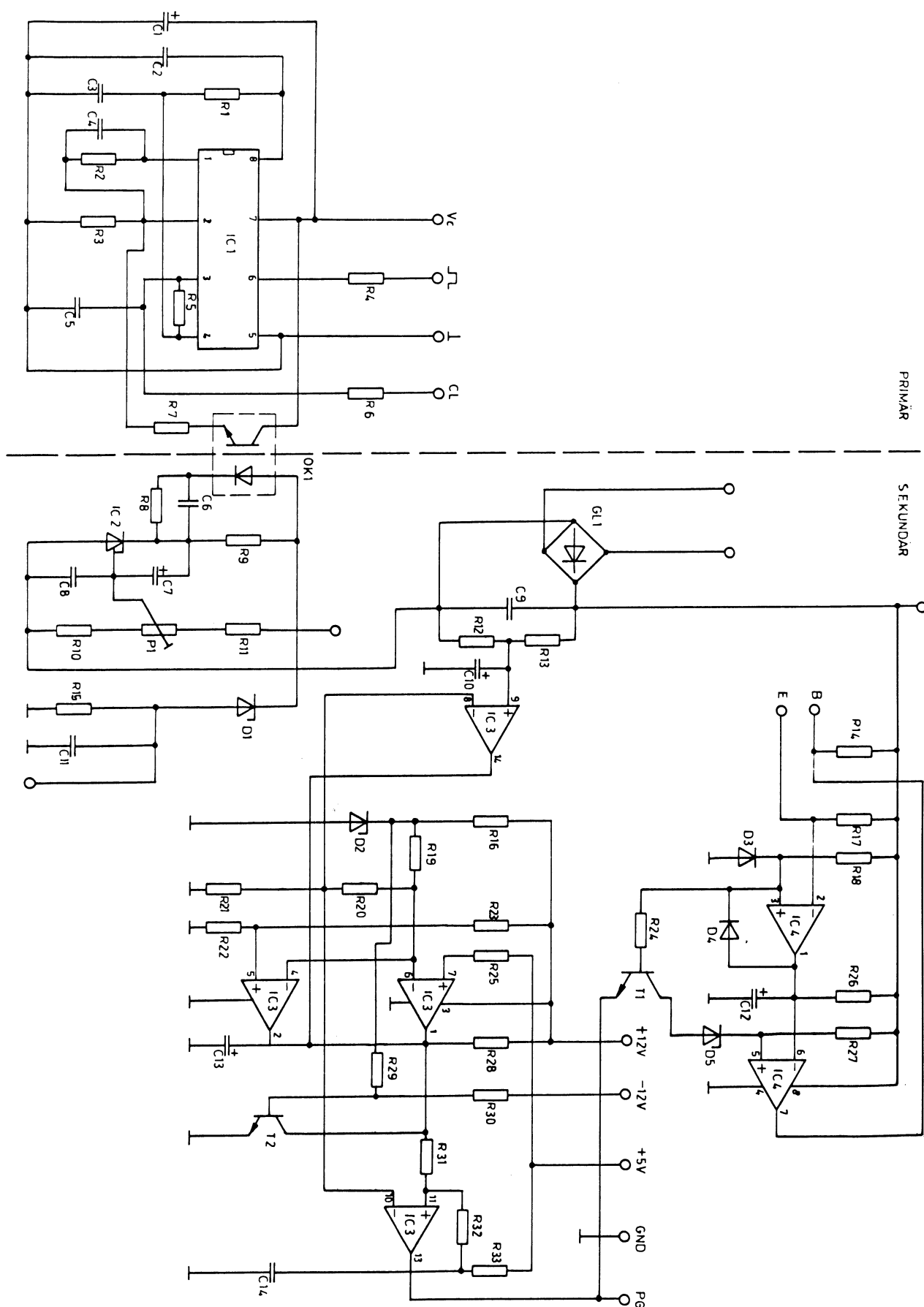
Schaltnetzteil „Tower“ SCD-SNT 90/01 B03 Id.580018 Ident Nr.7270-50215



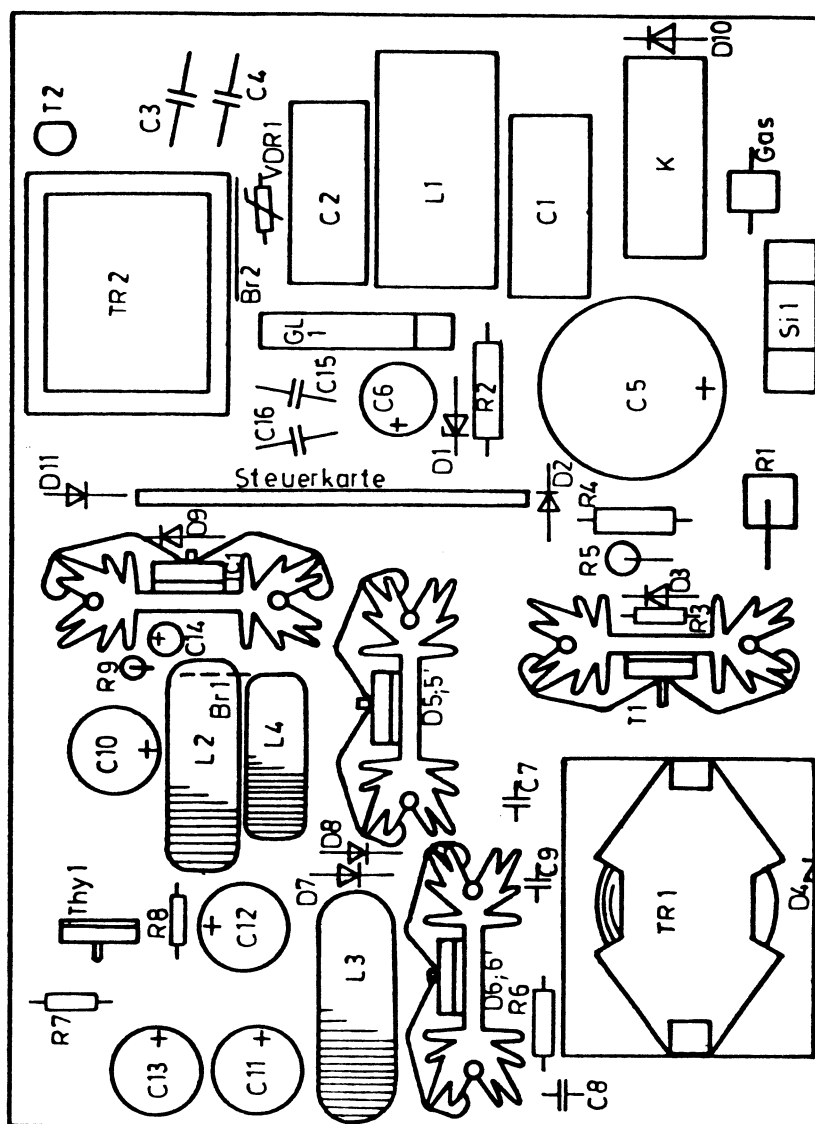
Schematic diagram
Power supply SCD-SNT 90/B03
Mainboard



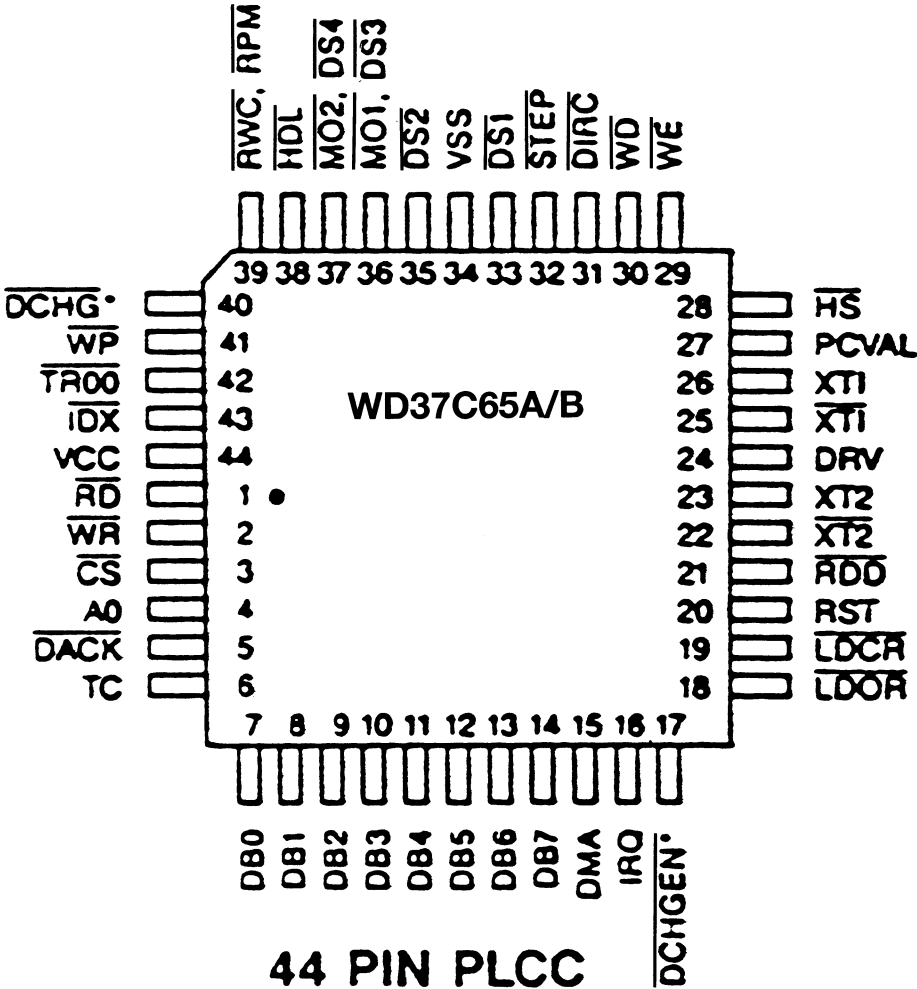
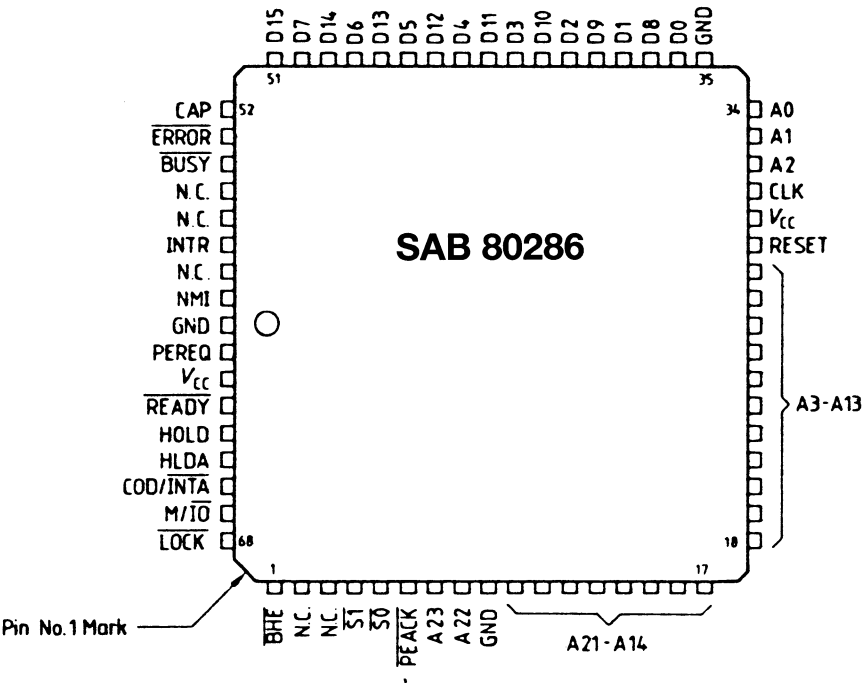
Power supply SCD-SNT 90/E02 Controlboard



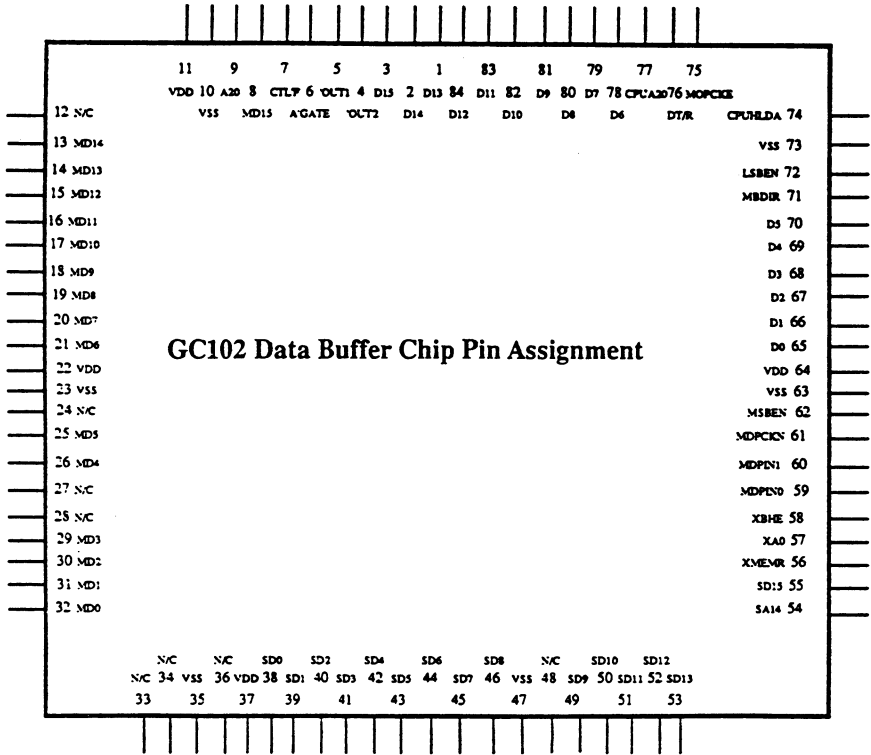
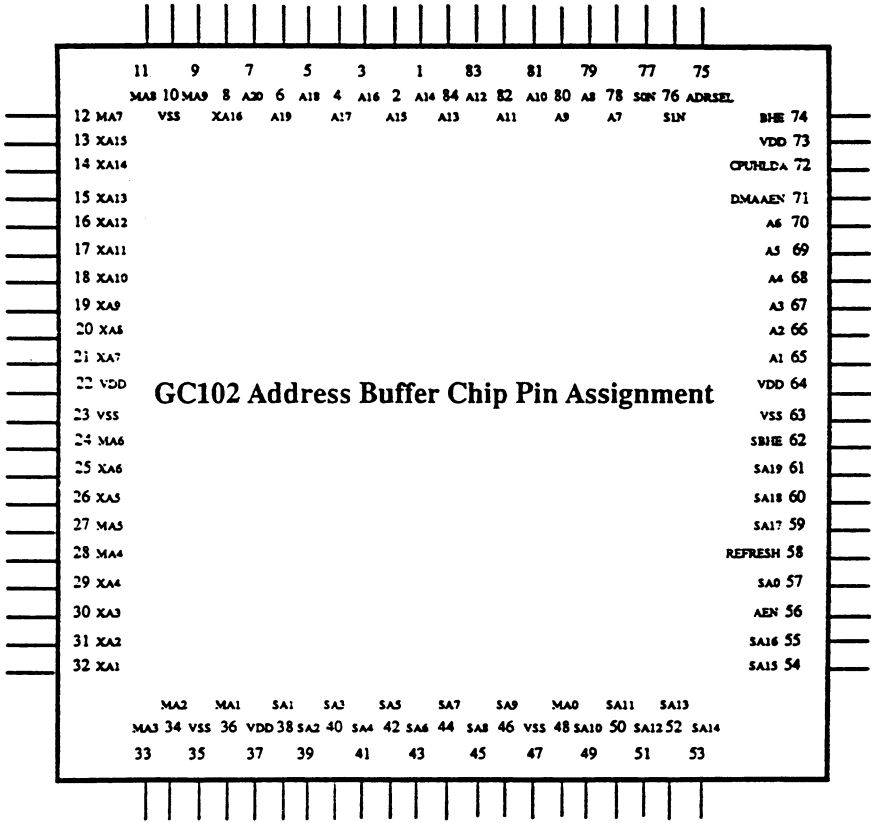
Component side



Pin assignment



Pin assignment



Pin assignment

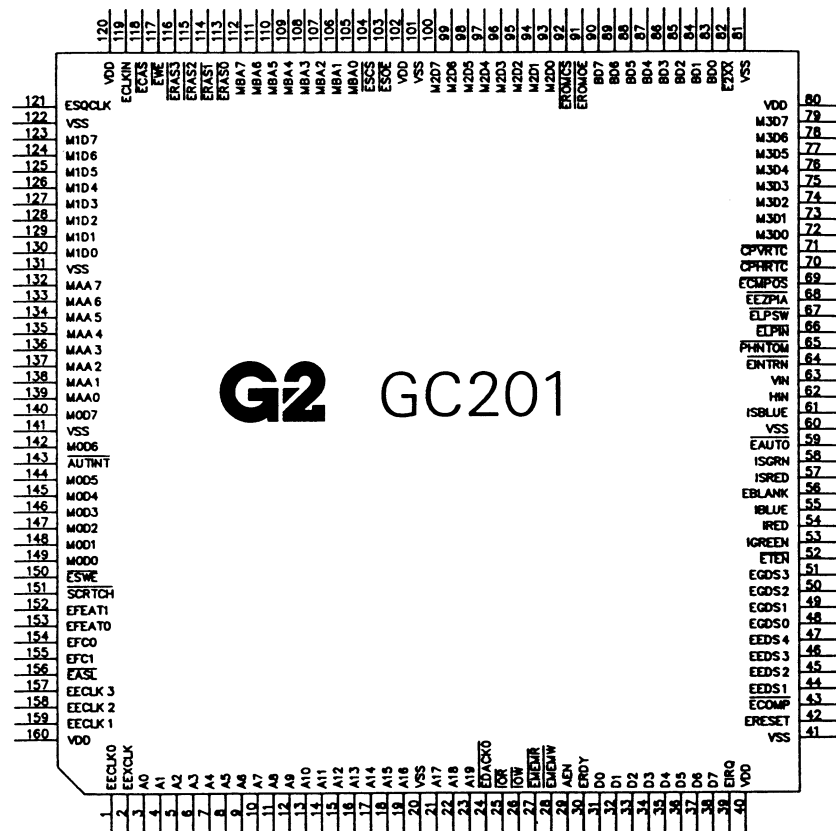
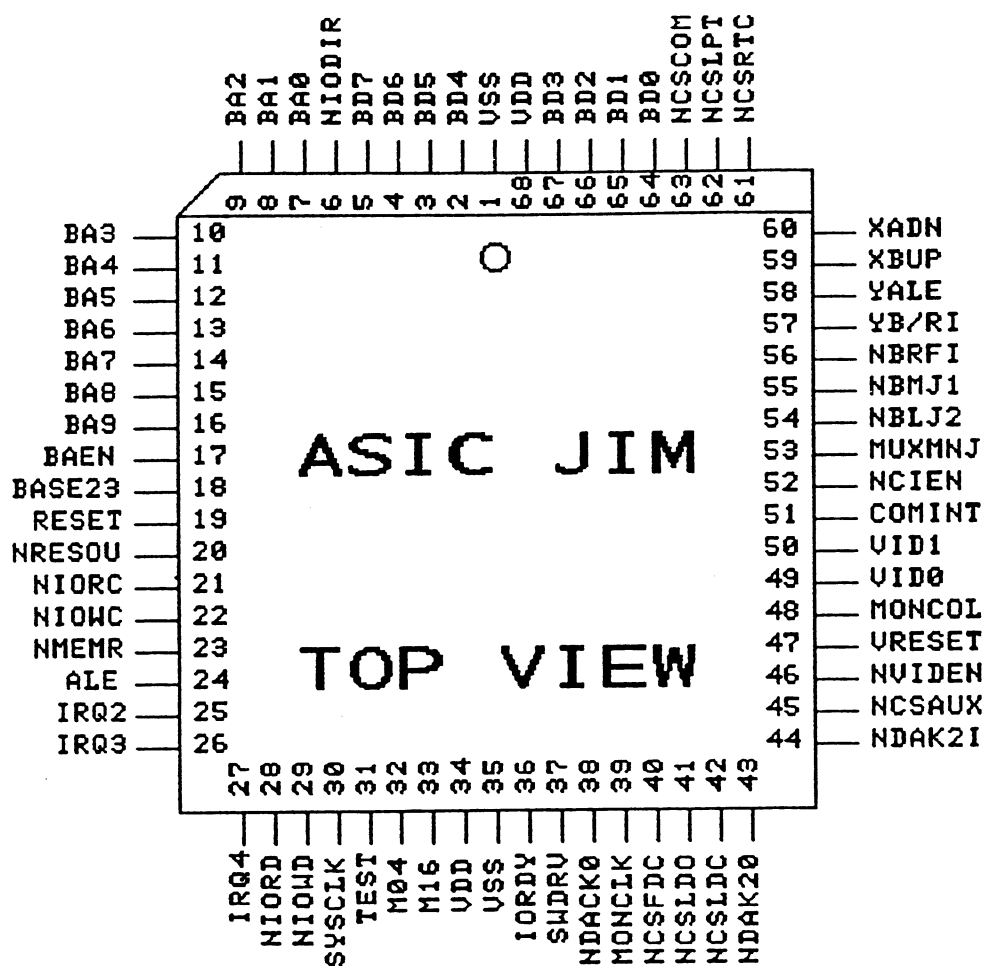
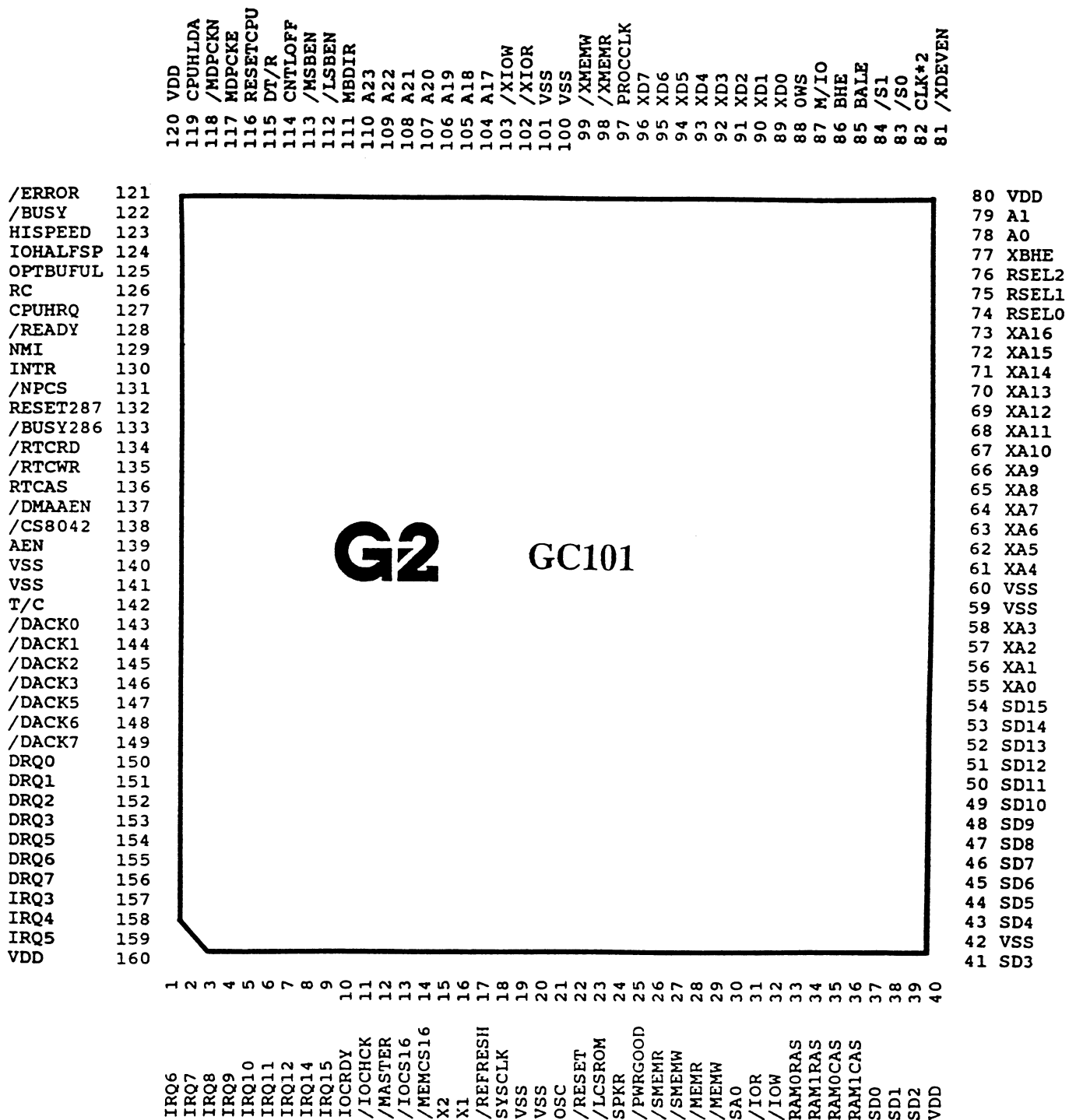


Figure 2 Pin Assignment



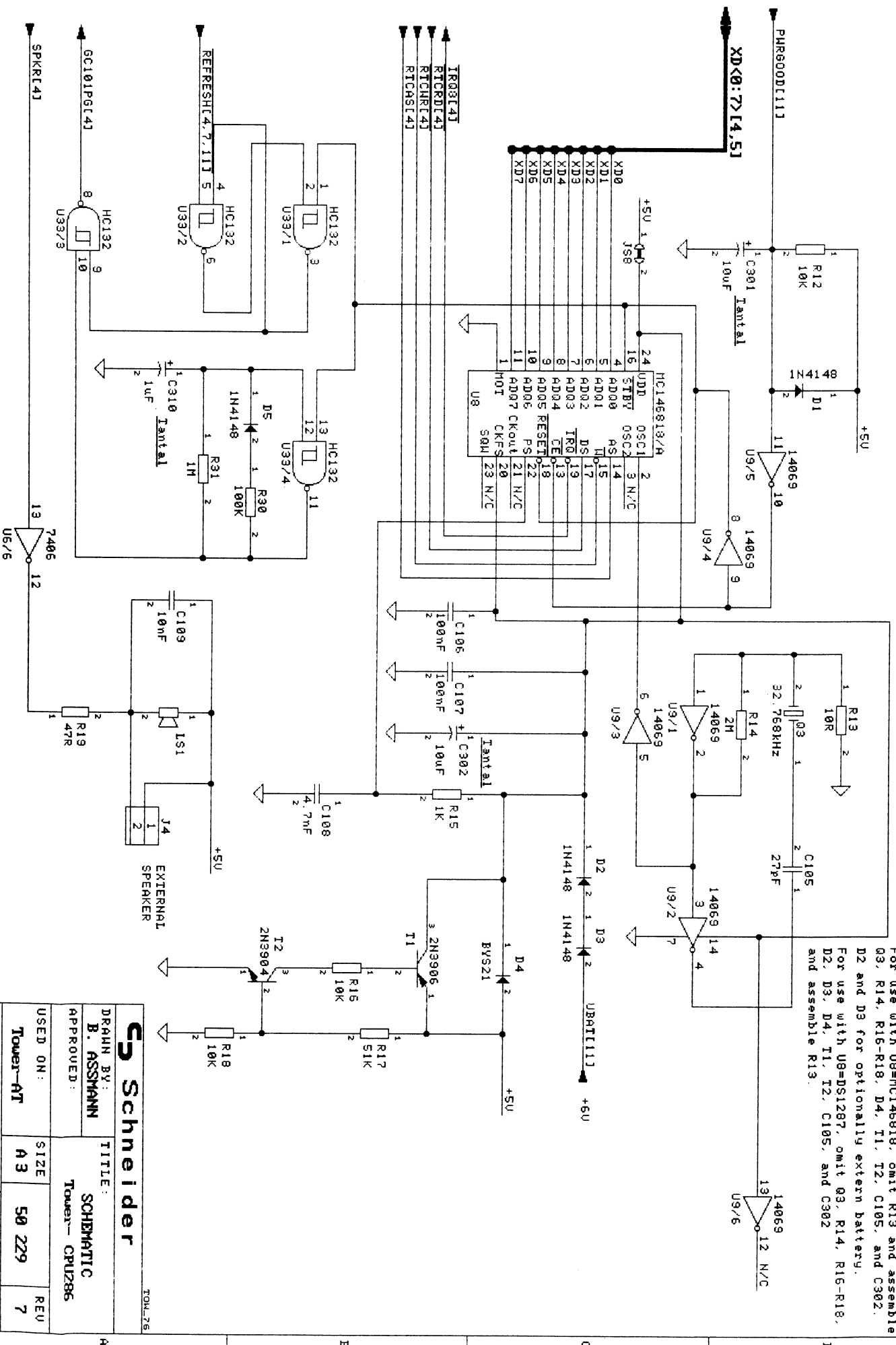
Pin assignment



Appendix A:

Different schematics CPU Rev. 8 – Rev. 7 (Layout Rev. 3)

NOTE:
 For use with U8=HC146818, omit R13 and assemble Q3, R14, R16-R18, D4, T1, T2, C105, and C302.
 D2 and D3 for optionally external battery.
 For use with U8=DS1287, omit Q3, R14, R16-R18, D2, D3, D4, T1, T2, C105, and C302 and assemble R13.



Schneider

TOM-26

DRAWN BY: B. ASSMANN
 APPROVED: [Signature]
 TITLE: SCHEMATIC
 Tower-CPUZ86

USED ON: Tower-AT
 SIZE: A3
 SHEET: 50 229
 REV: 7

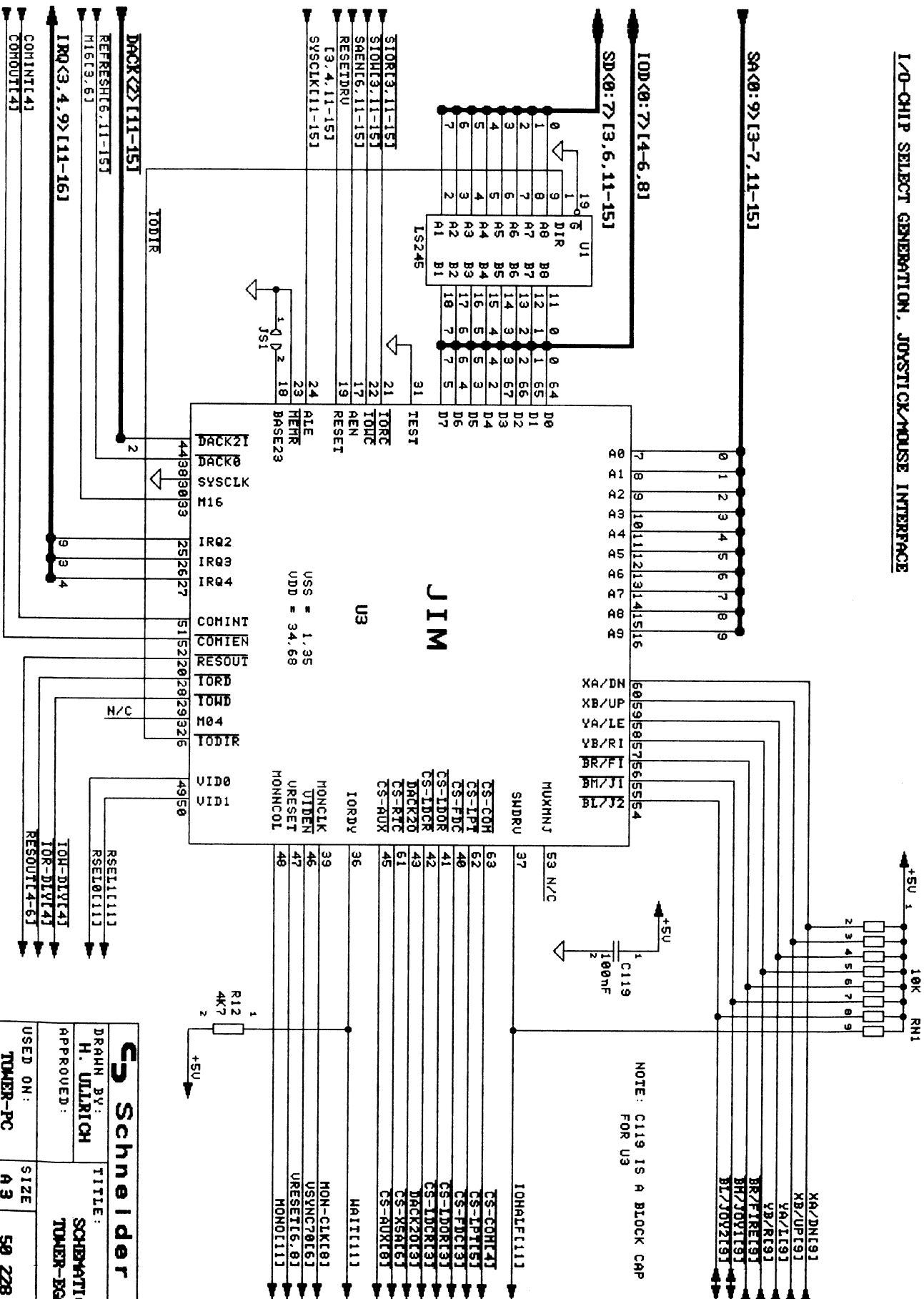
DATE: 08-31-88

SHEET: 6 of 12

Appendix B:

Different schematics EGA I/O Rev. 8 – Rev. 7 (Layout Rev. 2 without Reworks)

I/O-CHIP SELECT GENERATION, JOYSTICK/MOUSE INTERFACE



NOTE: C119 IS A BLOCK CAP FOR U3

Cj Schnelder

DRAWN BY:
H. ULLRICH

APPROVED:

TITLE:
SCHWARTIC
TIMER-BGA/10

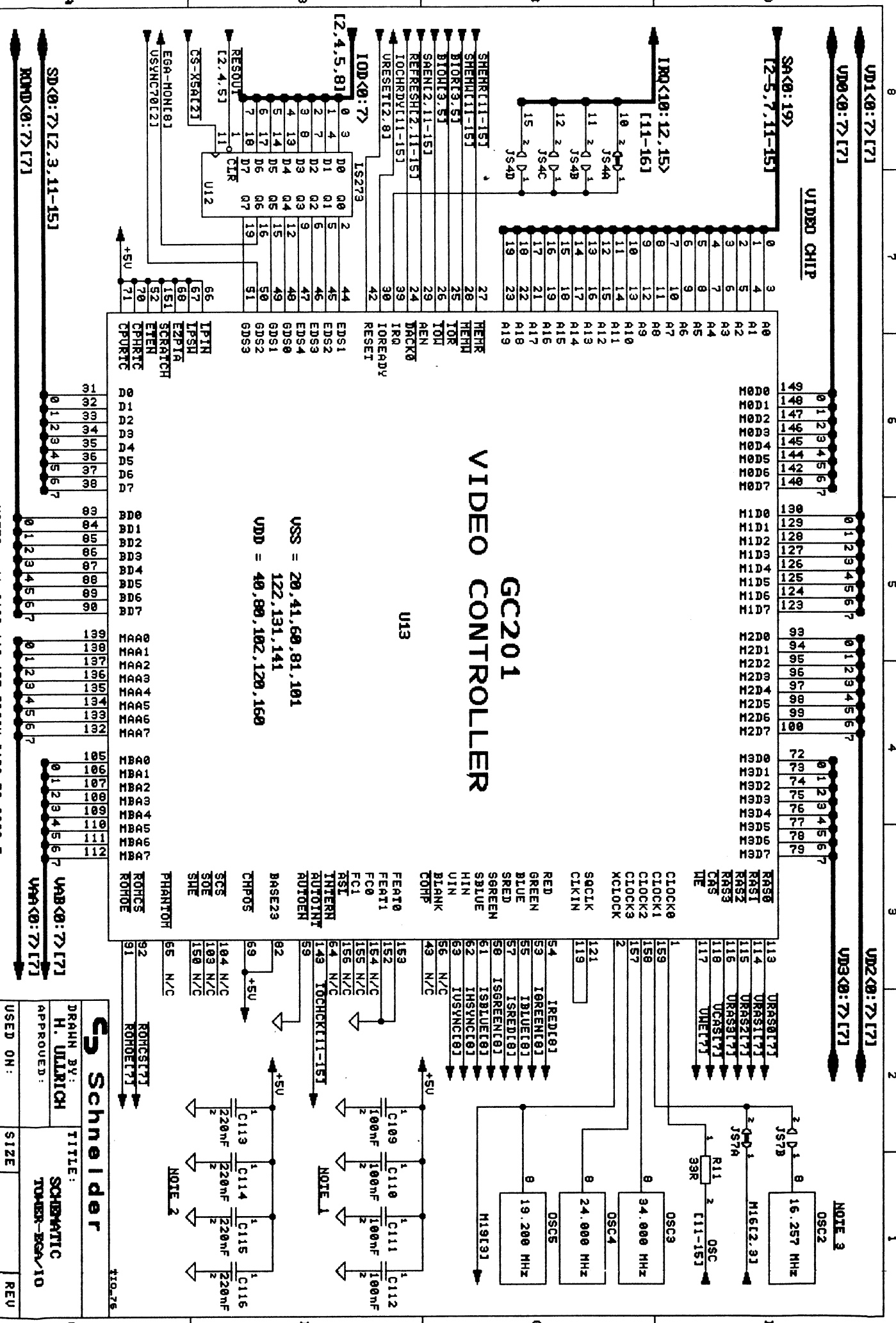
USED ON:
TIMER-PC

SIZE
A3

REV
7

DATE: 08-10-88

SHEET: 2 of 16



VIDEO CONTROLLER

GC201

U13

USS = 20, 41, 60, 81, 101
122, 131, 141
UDD = 40, 80, 102, 120, 160

PHANTOM
ROMCS
ROMOE

ROMCS171
ROMOE171

NOTE 2

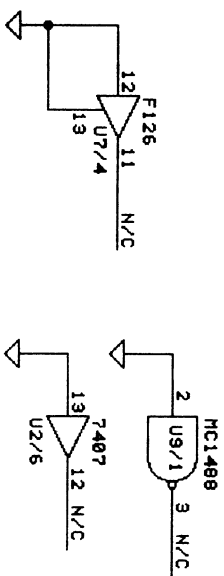
NOTE 1

NOTE 3

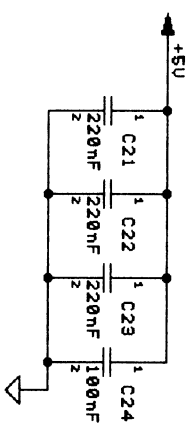
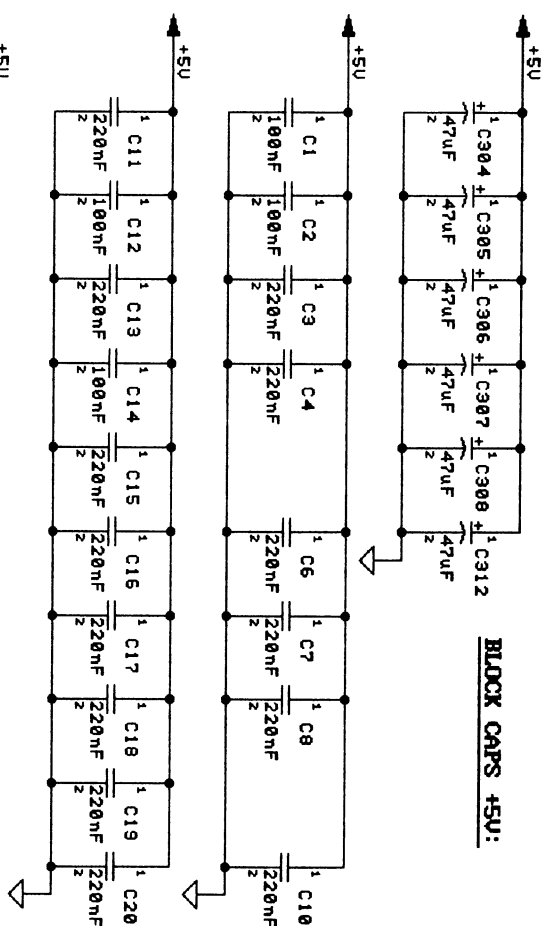
Schneider

DRAWN BY: H. ULLRICH
TITLE: SCHEMATIC
APPROVED: TUMER-PC
USED ON: SIZE A3
TUMER-PC
DATE: 08-10-08
SHEET: 6 of 16

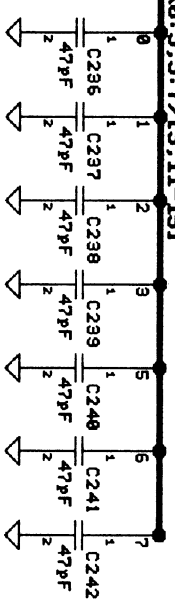
SPARE GATES



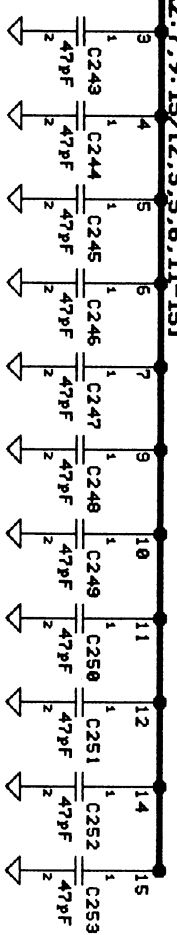
BLOCK CAPS +5V:



DMQ<0:3,5:7>[3,11-15]



DMQ<2:7,9:15>[2,3,5,6,11-15]



Schneider

DRAWN BY:
H. ULRICH

APPROVED:

TITLE:

SCHEMATIC
TUMER-PC9/10

USED ON:
TUMER-PC

SIZE
A3

NO
50 228

REV
7

DATE: 08-11-08

SHEET: 16 of 16

Appendix C:

Schematics CPU Rev. 9 (Layout Rev. 5)

REVISONS

LTR	DESCRIPTION	DATE	APPROVED
1	ADVANCED ENGINEERING RELEASE	05-13-88	SCHLAGE
2		05-18-88	ASSMANN
3		06-01-88	SCHLAGE
4	First Layout	06-22-88	SCHLAGE
5	Layout REV 2	08-06-88	ASSMANN
6	Layout REV 2 CORRECTIONS	08-22-88	ASSMANN
7	PCB REV 2A FIX OF BUS 'MASTER'	08-31-88	ASSMANN
8	PCB REV 4. LAYOUT: ADDITIONAL RESET LOGIC ELIMINATED	11-02-88	ULLRICH
9	PCB REV 5. LAYOUT: WITH GC 101 D	11-07-88	ASSMANN

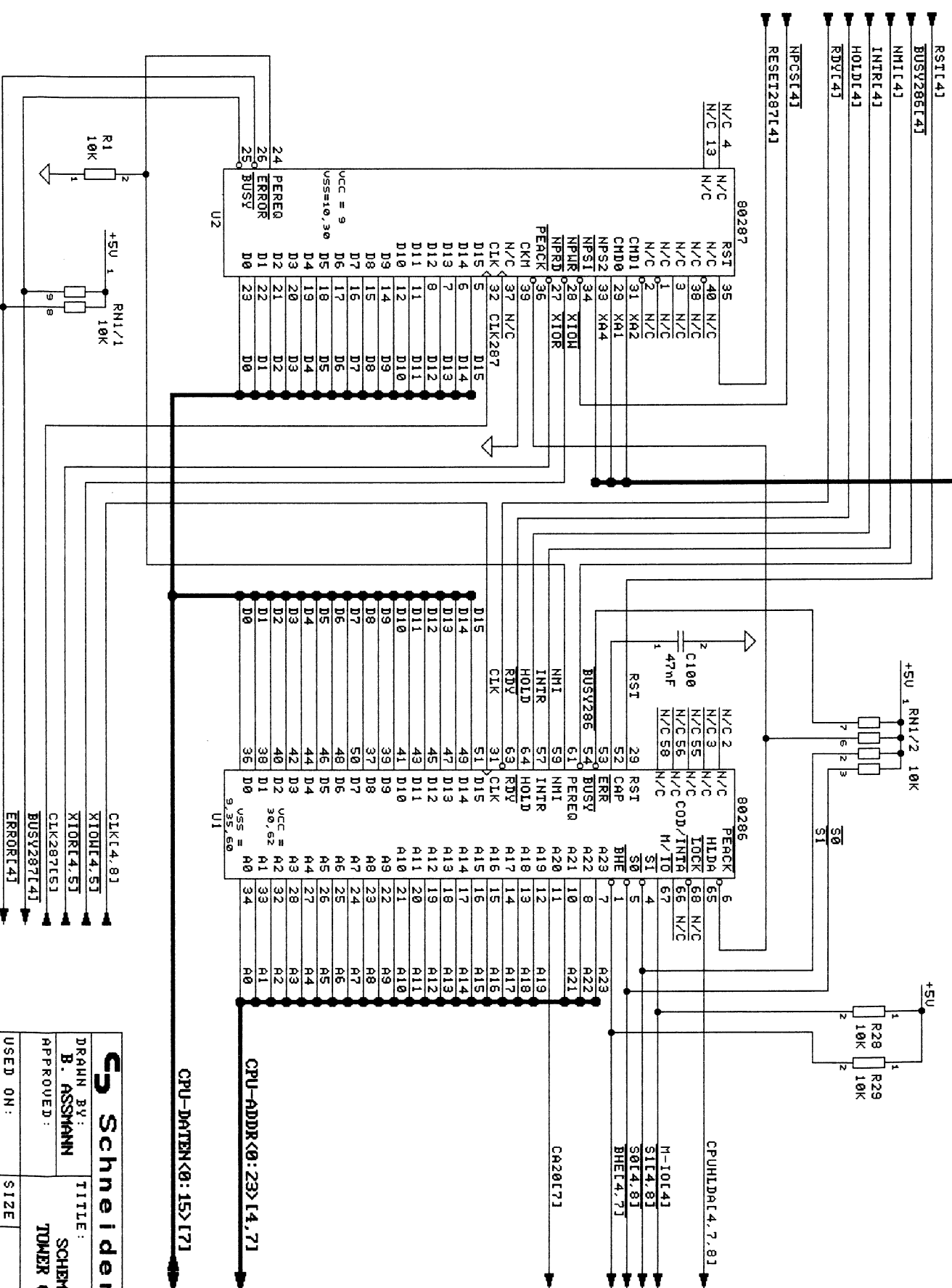
DRAWING FILES:

TDM_91.DWG	THIS SHEET
TDM_92.DWG	CPU SECTION
TDM_93.DWG	BIOS EPROMS
TDM_94.DWG	GC 101 D
TDM_95.DWG	KEYBOARD / CLOCKS
TDM_96.DWG	REAL TIME CLOCK
TDM_97.DWG	ADDRESS / DATA BUFFERS
TDM_98.DWG	TIMING FOR MEMORY
TDM_99.DWG	MEMORY ON SIL- MODULE
TDM_910.DWG	MEMORY ON BOARD
TDM_911.DWG	CONNECTORS
TDM_912.DWG	BLOCK CAPS

Schneider

DRAWN BY: B. ASSMANN
 APPROVED: TDMER CPU286

USED ON:	SIZE	50 229	REV
TDMER-AT	A 3		9
DATE: 11-07-88	SHEET: 1 of 12		



Schneider

DRAWN BY:
B. ASSMANN

APPROVED:

TITLE:
SCHEMATIC

TUMER CPU286

USED ON:

TUMER-AT

SIZE
A3

50 229

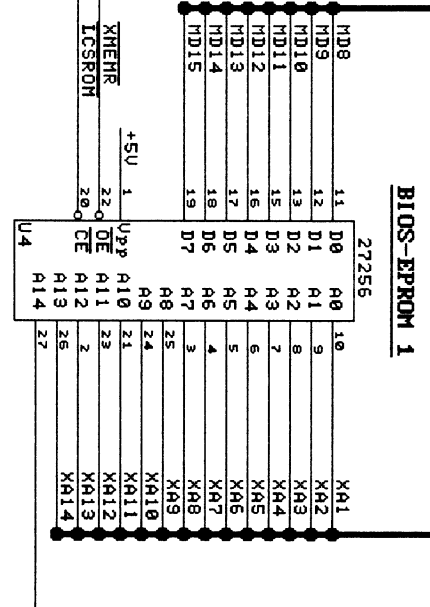
REV
9

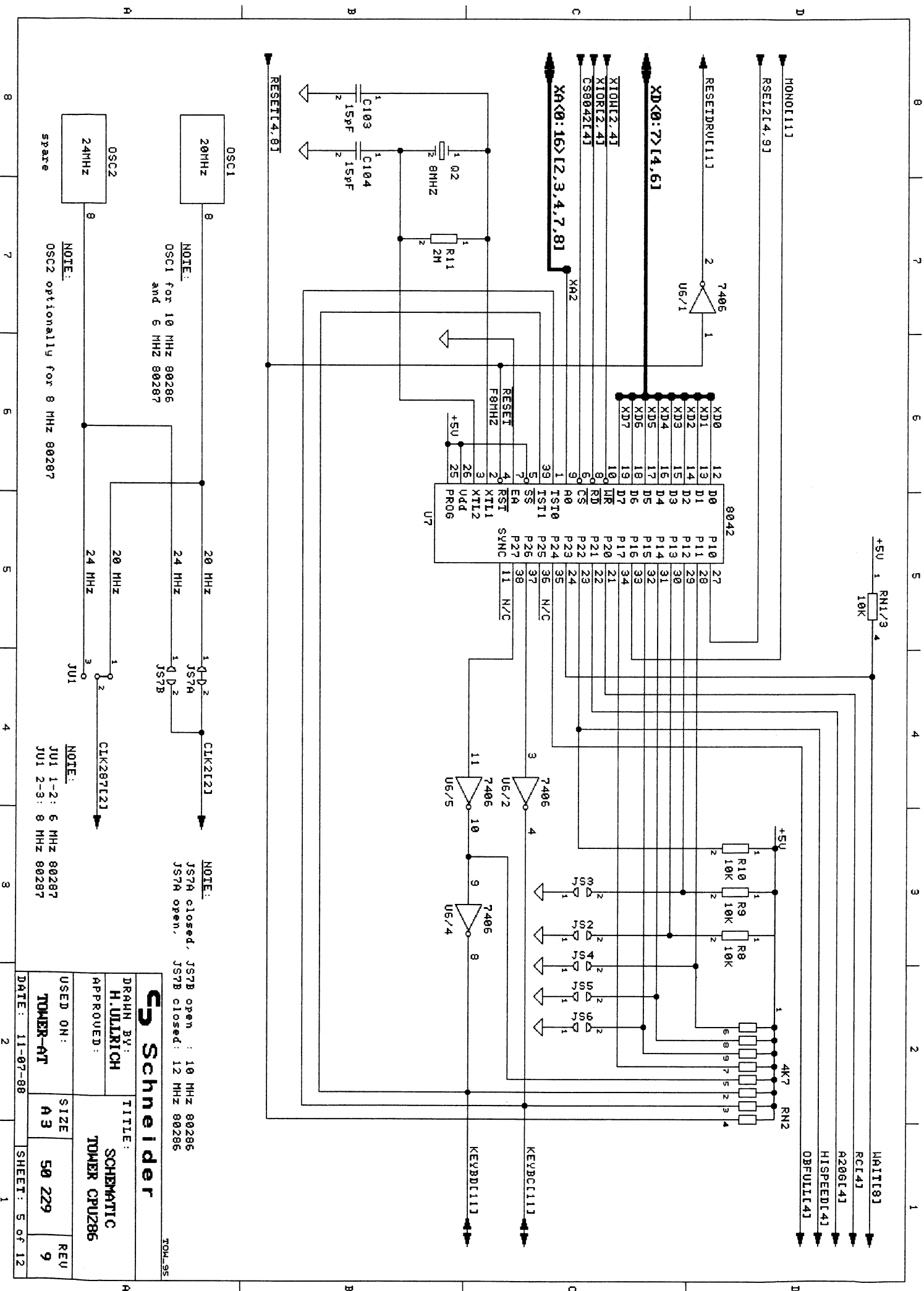
DATE: 11-07-88

SHEET: 2 of 12



NOTE: JS1A closed, JS1B open : 27256
JS1A open, JS1B closed : 27128





Schneider

DRAWN BY: H. ULLRICH
APPROVED: TOWER CPU286

USED ON: SIZE A 3
TOWER-AT 50 229

DATE: 11-07-88
SHEET: 5 of 12

REU 9

NOTE:
JS7A closed, JS7B open : 10 MHz 80286
JS7A open, JS7B closed: 12 MHz 80286

NOTE:
JUI 1-2: 6 MHz 80287
JUI 2-3: 8 MHz 80287

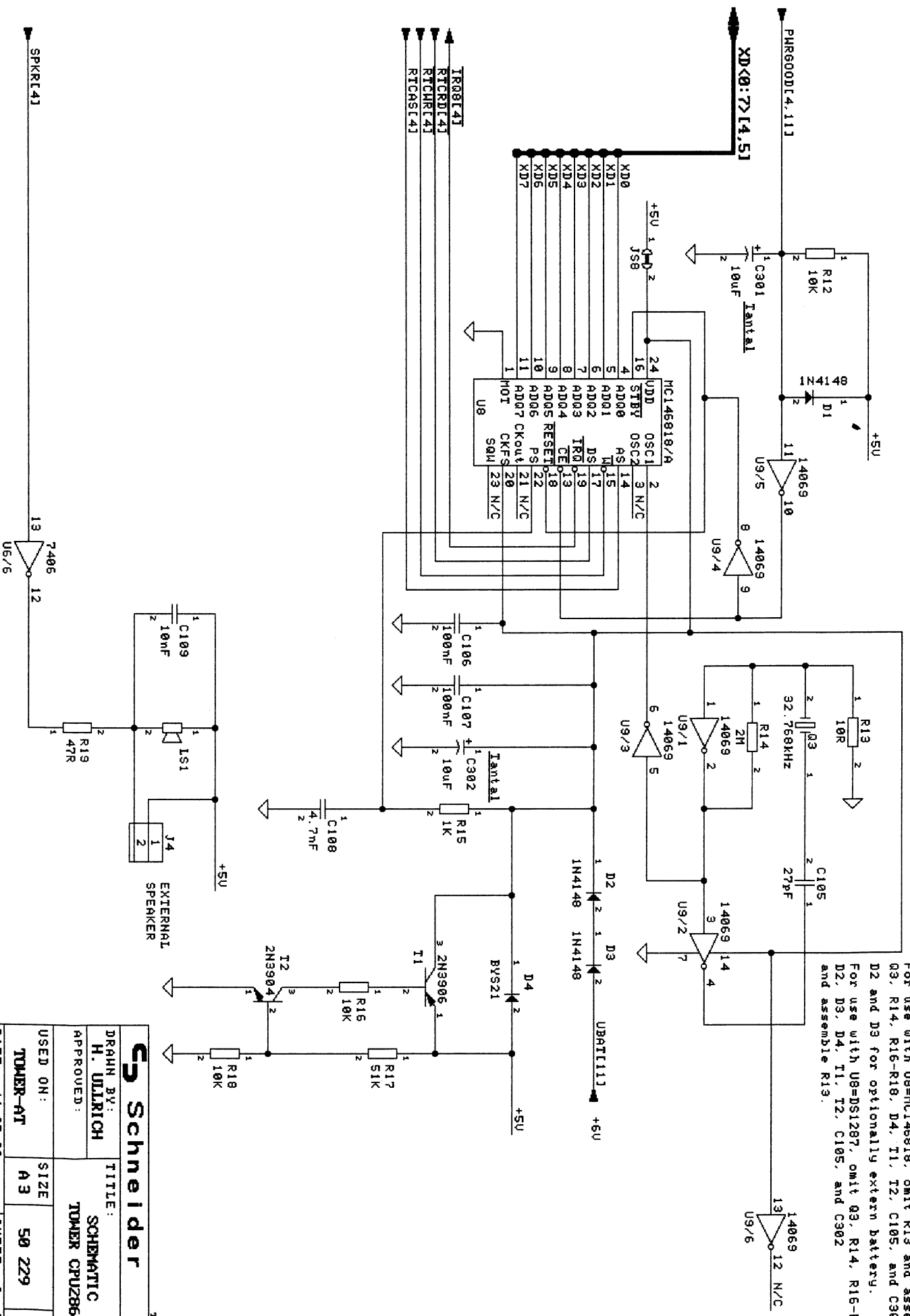
NOTE:
OSC2 optionally for 8 MHz 80287

NOTE:
OSC1 for 10 MHz 80286
and 6 MHz 80287

OSC2
24MHz
space

OSC1
20MHz

NOTE:
For use with U8=MC146818, omit R13 and assemble Q3, R14, R16-R18, D4, T1, T2, C105, and C302.
D2 and D3 for optionally external battery.
For use with U8=DS1287, omit Q3, R14, R16-R18, D2, D3, D4, T1, T2, C105, and C302 and assemble R13.



Schneider

TOM-95

DRWN BY:
H. ULRICH

TITLE:
SCHEMATIC

APPROVED:

TUMER CP1286

USED ON:

SIZE

REV

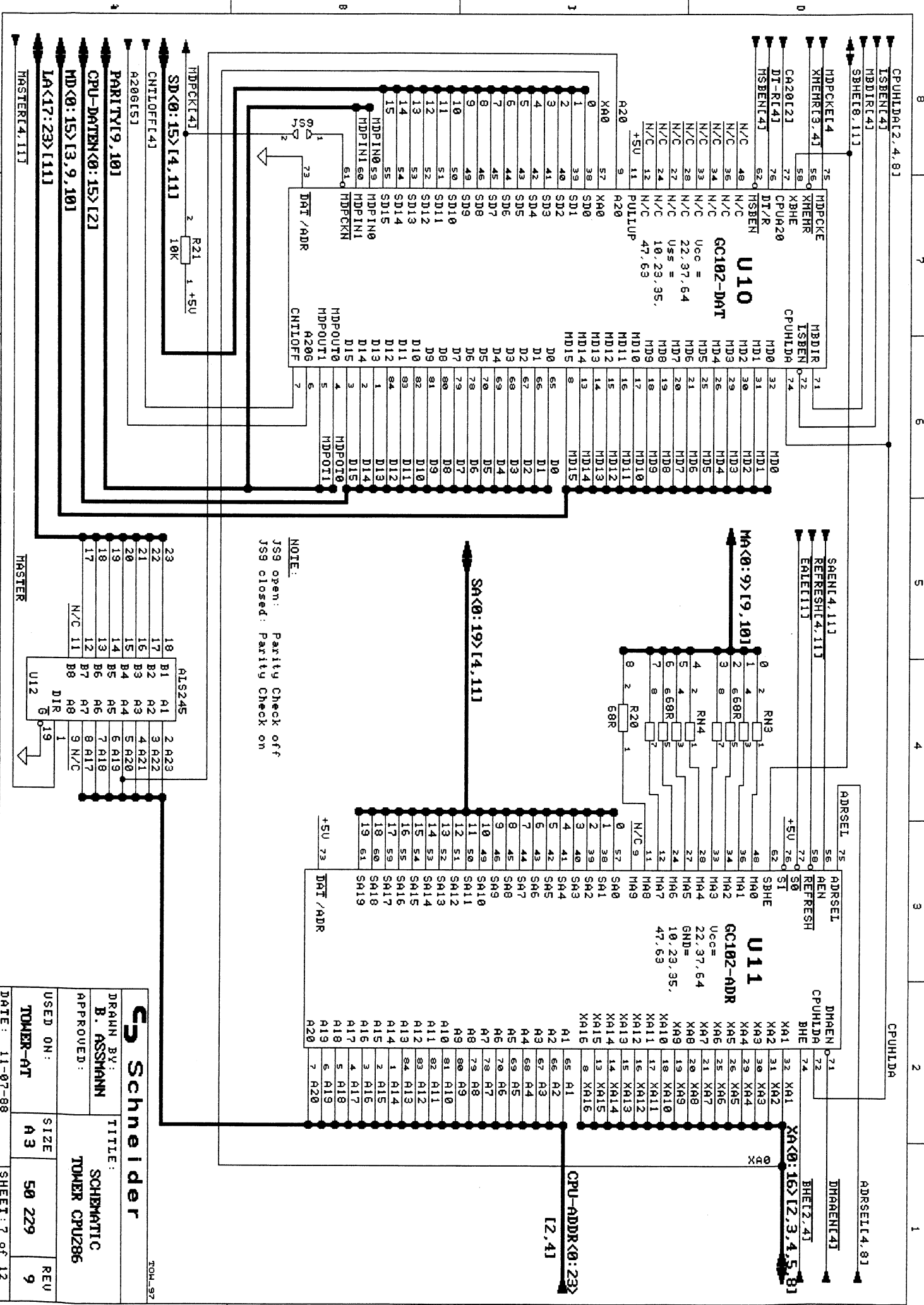
TUMER-AT

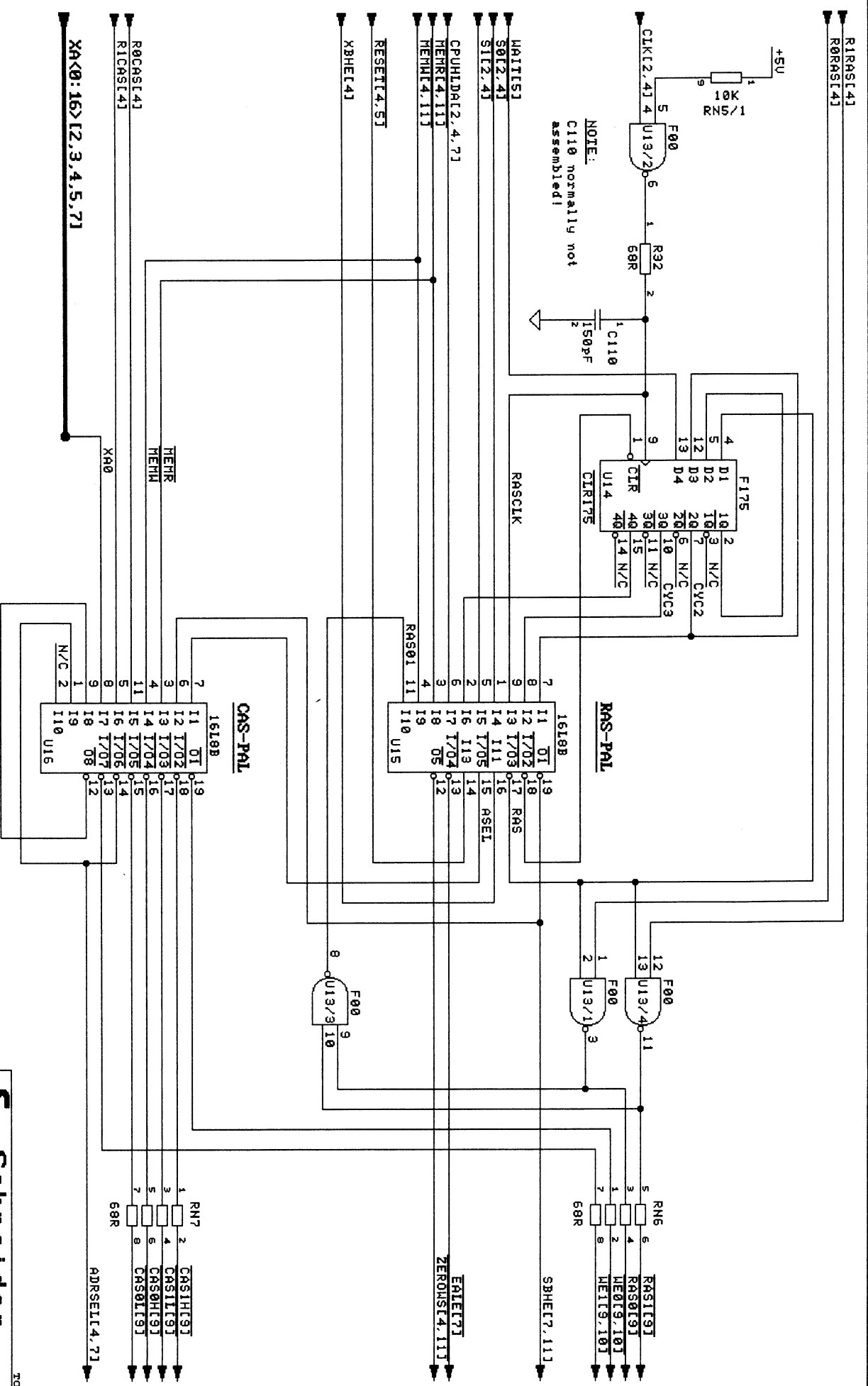
A3

9

DATE: 11-07-98

SHEET: 6 of 12





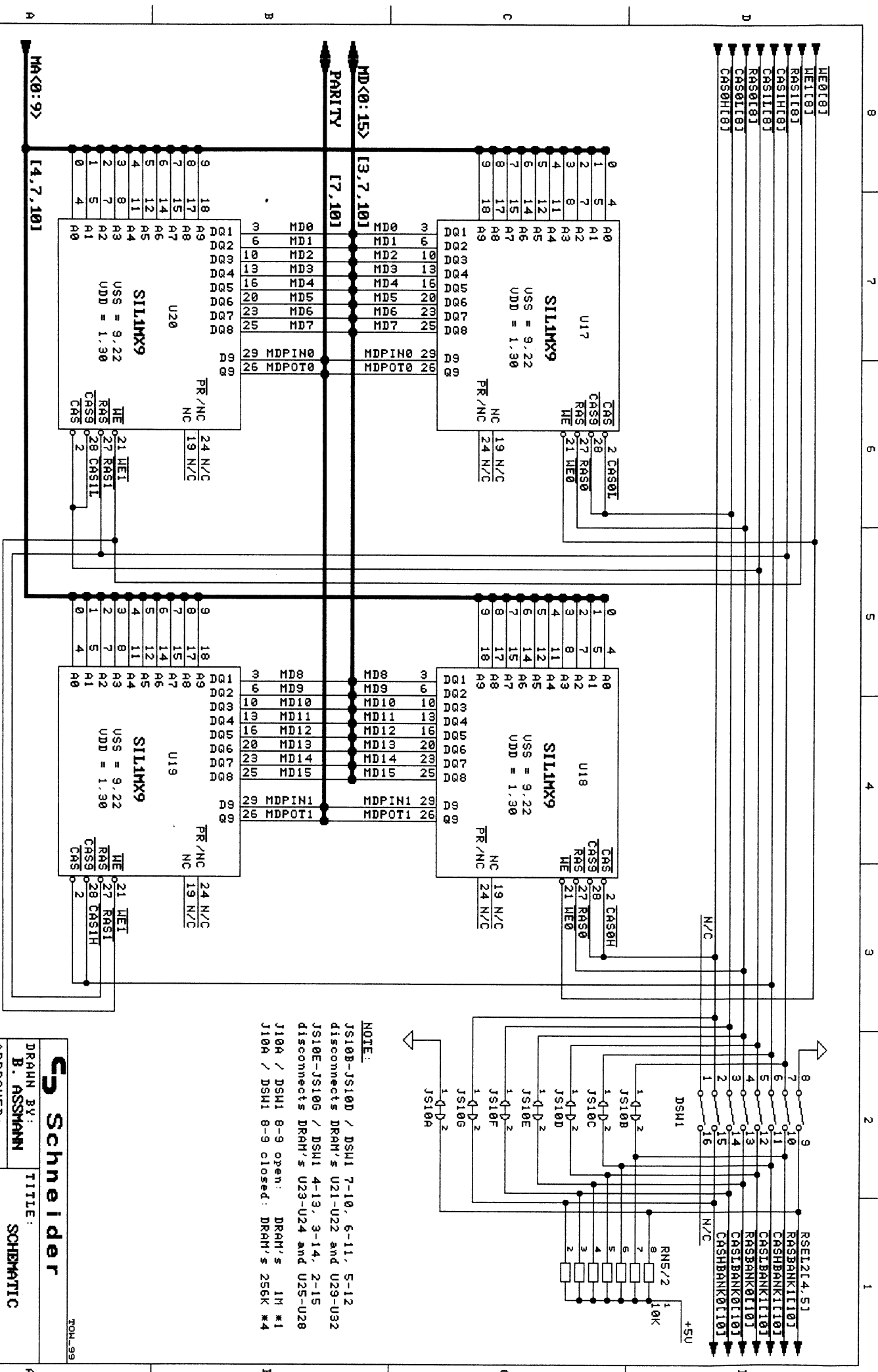
NOTE:
C110 normally not
assembled!

Schneider
TOM-98

DRAWN BY: B. ASSMANN
APPROVED: TITLE: SCHEMATIC
TOWER CPU286

USED ON: SIZE: A3
TOWER-AT 50 229
REV: 9

DATE: 11-07-88 SHEET: 8 of 12



SCHEMATIC

TOWER CPU286

DATE: 11-07-88

USED ON:

TOWER-AT

SIZE: A3

50 229

REV: 9

Schneider

TON-993

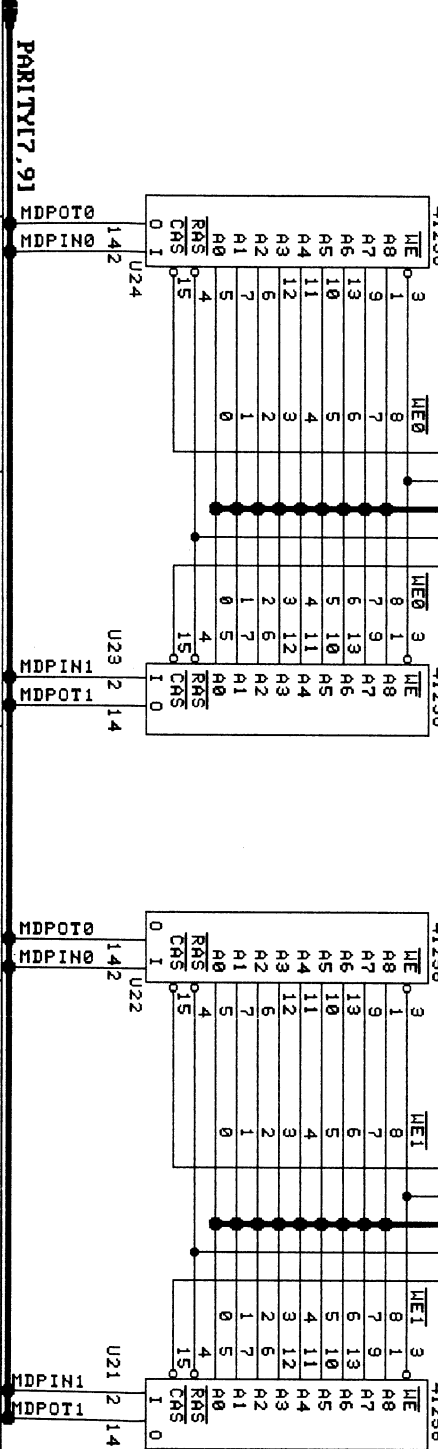
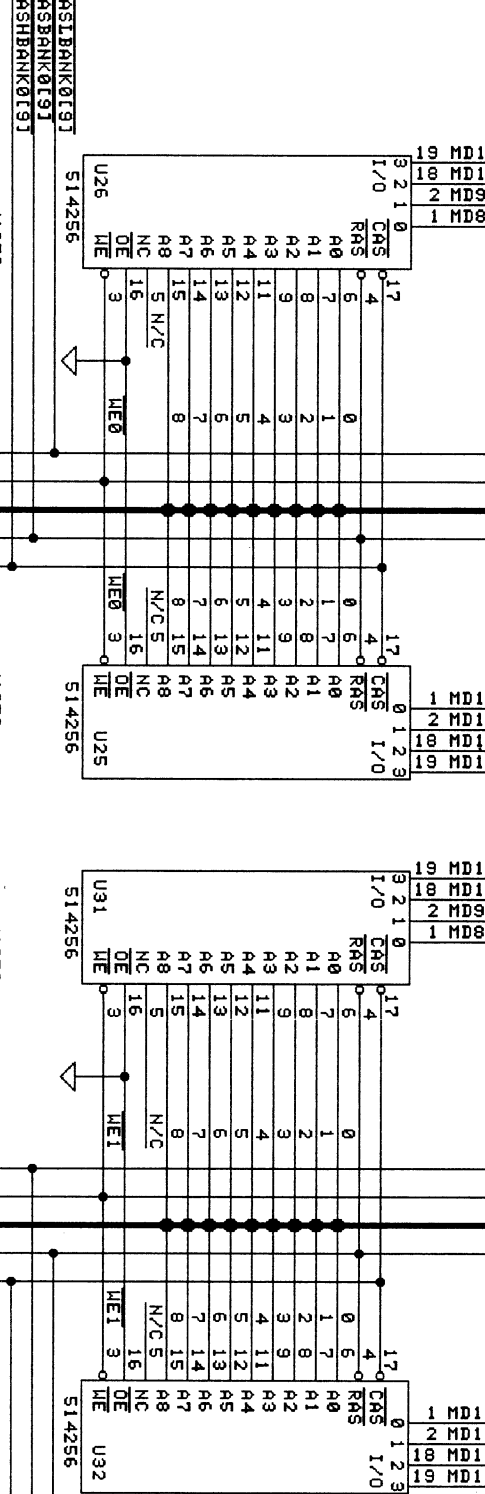
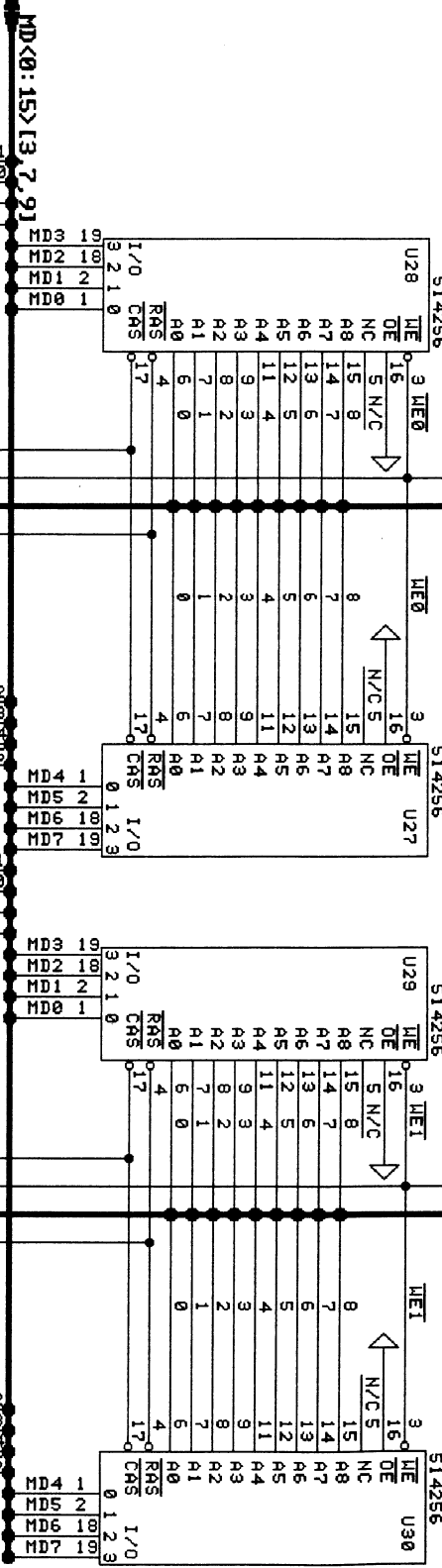
DRAMA BY: B. ASSMANN

APPROVED: 1

NOTE:

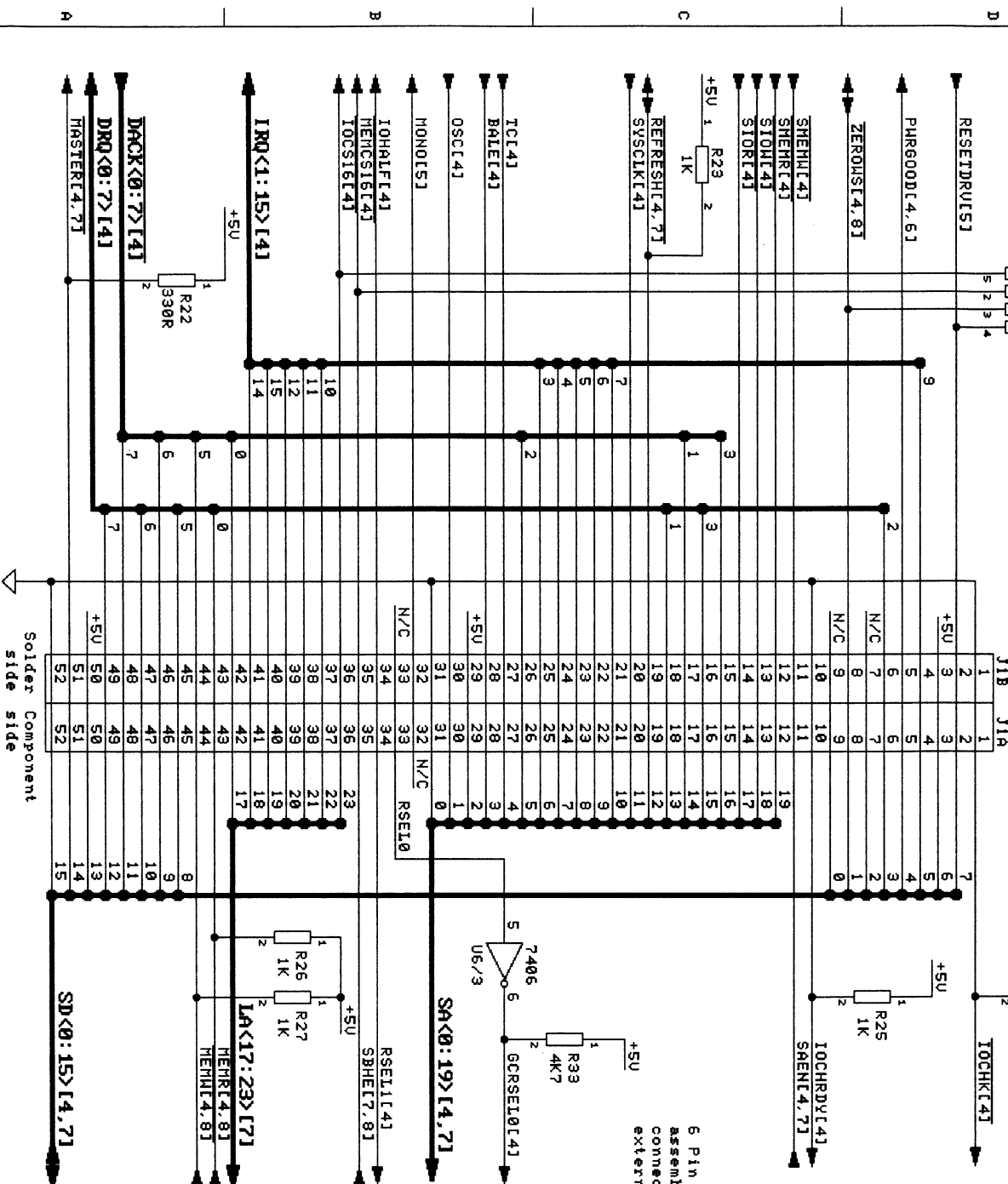
JS10B-JS10D / DSU1 7-10, 6-11, 5-12
 disconnects DRAM's U21-U22 and U23-U24
 JS10E-JS10G / DSU1 4-13, 3-14, 2-15
 disconnects DRAM's U23-U24 and U25-U26
 J10A / DSU1 8-9 open: DRAM's 1M *1
 J10B / DSU1 8-9 closed: DRAM's 256K *4

MA<0:9>[7,9] ME0[8,9] ME1[8,9]

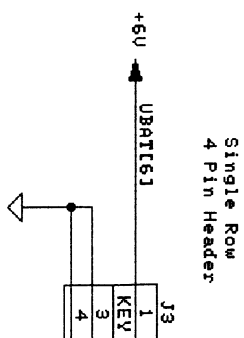


		SCHEMATIC TOWER CPU286	
DRAWN BY: B. ASSMANN		TITLE:	
APPROVED:		USED ON:	
TOWER-AT		SIZE A3	
DATE: 11-07-88		SHEET: 10 of 12	
REV		9	

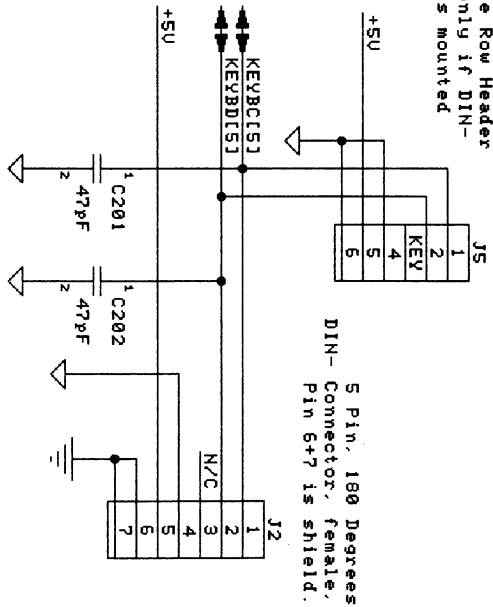
AT - Bus, 104 Pin Card Edge Connector



Battery- Connector +6V



Keyboard- Connector

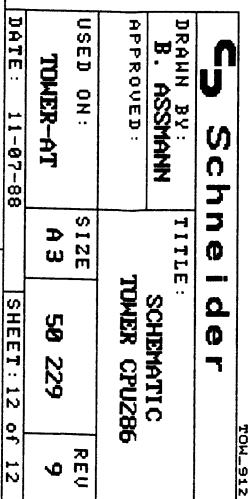


Schneider

DRAWN BY: H. ULLMICH
APPROVED: TOWER CPU286

USED ON: TOWER-AT
SIZE: A3
50 229
REV: 9

DATE: 11-07-88
SHEET: 11 of 12



Bitte bei Ersatzteilbestellung die genaue Bezeichnung und Ident-Nr. (siehe Typenschild) des Gerätes sowie Bestell-Nummer und Positions-Nummer des Ersatzteils angeben.

For ordering of spare parts please state exact description and ident.-no. of unit (see silver rating label on the backside of unit) as well as part no. and position no. of required spare parts.

Benutzen Sie:

Telex: 531516

oder



* 317298 #

oder

Telefax: 08245/51326